BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA'S NORTH SLOPE

By

Alket Mici

RECOMMENDED:

Walter Almon, M.S.

Roger Hull, PMP, CRISC

LuAnn Piccard, M.S., PMP
Chair, Advisory Committee

LuAnn Piccard, M.S., PMP
Chair, Engineering, Science, and
Project Management Department

APPROVED:

Kenrick Mock, Ph.D.
Associate Dean, College of Engineering

Date

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA'S NORTH SLOPE

A

PROJECT

Presented to the Faculty

of the University of Alaska Anchorage

In Partial Fulfillment of the Requirements

for the Degree of

MASTER OF SCIENCE

By

Alket Mici, MS

Anchorage, Alaska

December 2015

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

FINAL PROJECT REPORT

(PMI Format)

University of Alaska Anchorage
Fall 2015

BEST PRACTICES AND GUIDELINES FOR OIL DRILL RIG SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

Disclaimer

This paper is provided for information purposes only and does not provide extensive analysis of every material fact. The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented. The content is not influenced by, and does not represent the official position of the sponsoring organization and advisory committee. The project documents and this research paper contain certain non-attributable references to information, in order to protect the confidentiality of the sources. No names of companies or individuals were used, unless the information was publicly available. This report shall not be reproduced, distributed, or published by any recipient without the author's approval.

Project Management Department, University of Alaska, Anchorage.

Abstract

The recent increase in the number of the projects and activities on the North Slope of Alaska has become challenging, leading to numerous scheduling conflicts for equipment and resources. This project explains steps that can be taken to improve resource allocation and guidelines for scheduling oil drill rig work activities for oil and gas projects on Alaska's North Slope.

The project includes insights from two years of research to improve the oil drill rig scheduling process, a survey of subject matter experts involved in the oil drill rig scheduling process, research of similar Arctic environment projects, and the researchers professional experience identifying and mitigating risks and schedule conflicts in the mid-term planning phase of oil and gas projects.

Implementing the proposed guidelines has improved the oil drill rig scheduling process, roles and responsibilities are more clearly defined, communication among groups has been improved and support groups have adequate time to complete their work. Results include reduction of oil drill rig move downtime and a reduction in the time to produce oil after the oil drill rig leaves the well site.

Project Research Key Words

- Oil drill rig scheduling process
- Oil drill rigs / work-over rigs
- Oil drill rig schedule
- Oil drill rig scheduling tools
- Drill rig schedule optimization tools
- Oil drill rig schedule optimization
- Artic projects
- Remote projects
- North Slope project risks
- Challenges with North Slope projects
- Oil and gas remote projects

Project Management Department, University of Alaska, Anchorage.

Table of Contents

Page

Project Management Department, University of Alaska, Anchorage.

Project Management Department, University of Alaska, Anchorage.

List of Exhibits

List of Appendix

Introduction

The recent increase in the number of the projects and activities on the North Slope of Alaska has become challenging, leading to numerous scheduling conflicts for equipment and resources. This project explains steps that can be taken to improve resource allocation and guidelines for scheduling oil drill rig work activities for oil and gas projects on Alaska's North Slope.

The purpose of the study was to:

- Explain the steps required to improve the oil drill rig scheduling process
- Share professional experience with other groups and project managers
- Contribute to the body of knowledge of oil and gas projects and project management
- Demonstrate mastery of project management processes

The project includes insights from two years of research to improve the oil drill rig scheduling process, a survey of subject matter experts involved in the oil drill rig scheduling process, research of similar Arctic environment projects, and the researchers professional experience identifying and mitigating risks and schedule conflicts in the mid-term planning phase of oil and gas projects.

During research, surveys and interviews of key oil drill rig schedule stakeholders identified two main areas for improvement:

- Oil drill rig schedule process workflow
- Oil drill rig scheduling tool

A project team, with members from all groups involved in the oil drill rig scheduling process was assigned to meet once every two weeks until the deliverables were met.

First, the existing process was documented in a workflow diagram. After analyzing the existing process, came up with three different improved processes for each activity class: drilling, work-over and coil tubing drilling (CTD) (see glossary definitions for oil drill rig classification). Then identified the project gates and developed a checklist with the minimum criteria to:

- Enter an activity in the schedule
- Break-in or progress a well in the 90 day gate
- Break-in or progress a well in the 28 day gate

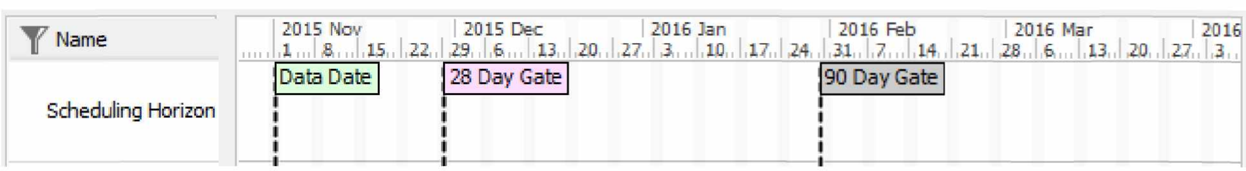


Exhibit 1: Schedule Horizon

Source: (North Slope Alaska, Oil and Gas Company)

Exhibit 1 shows the scheduling horizon for a typical oil and gas producer in Alaska's North Slope. Scheduling horizons are defined as long-range, mid-rage and short-range:

Long-range planning horizon: Greater than two years from the execution date
Mid-range planning horizon: 90 days to 2 years from the execution date
Short-range planning horizon: 90 days from the execution date

In addition, a break-in process was created to manage schedule changes within the 28 and 90 day horizon for drilling, work-over and coil tubing drilling processes.

Second, the project manager identified a new oil drill rig scheduling optimization tool used by one of the business units. After evaluating the tool and working with the software developer to meet stakeholder needs, the new oil drill rig scheduling tool was implemented.

Finally, the oil drill rig schedule meeting was improved which shifted the emphasis of the meeting from a working session to a reporting forum. As a result, the changes to the schedule and the break-in approval process are conducted prior to the meeting.

Implementing the proposed guidelines has improved the oil drill rig scheduling process, roles and responsibilities are more clearly defined, communication among groups has been improved and support groups have adequate time to complete their work. Results include reduction of oil drill rig move downtime and a reduction in the time to produce oil after the oil drill rig leaves the well site.

Project Research Approach

The project includes insights from two years of research to improve the oil drill rig scheduling process, a survey of subject matter experts involved in the oil drill rig scheduling process, research of similar Arctic environment projects, and the researchers professional experience identifying and mitigating risks and schedule conflicts in the mid-term planning phase of oil and gas projects.

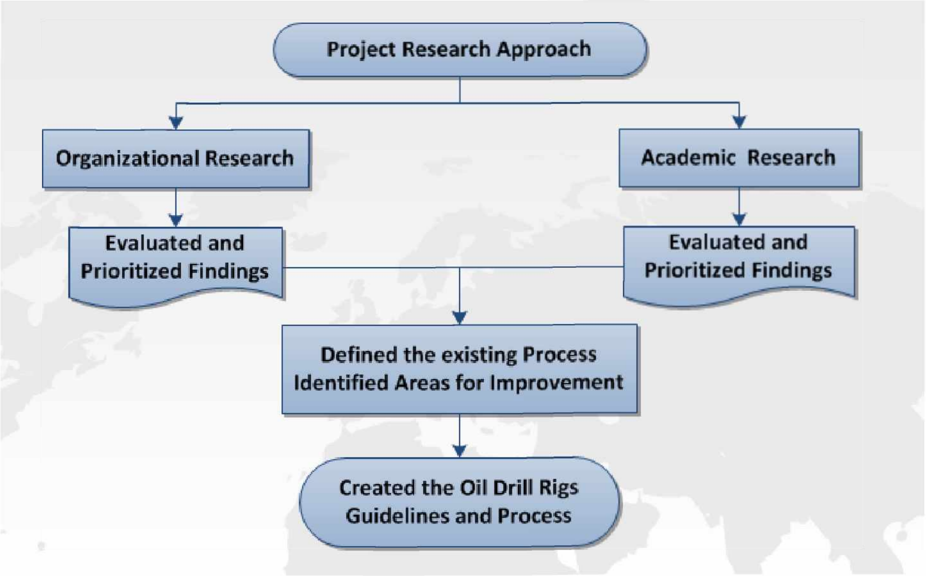


Exhibit 2: Project research approach

Exhibit 2 shows the graphical representation of the project research approach. The results of the academic and organizational research were evaluated and prioritized. The findings were compared in order to find the scheduling conflicts, challenges, differences and similarities.

Organizational Research

Prior to starting the project, the project manager attended a workshop to better organize and facilitate meetings, identifying tools and techniques for collaboration. This workshop identified tools and techniques that were the most appropriate and efficient for capturing the current process work flow, issues, conflicts, and areas for improvement.

Exhibit 3: Organizational research process

Exhibit 3 shows the graphical representation of the organizational research approach. The project manager performed the organizational research focused in four different groups and organizations: The project owners, Alaska's North Slope partners, field organizational survey and company's wide survey. One of research objectives was identifying any rig scheduling processes or guidelines already implemented. The other objective was to create a rig scheduling process and guideline and compare to other groups processes.

The project manager drafted the project management plan and deliverables, identified stakeholder requirements, and obtained approvals in order to improve the process workflow. The project manager submitted the project deliverables to the core team members, advisors and subject matter experts for review and feedback. The project progress was presented to the team members and advisors once every two weeks until the deliverables were produced and accepted.

Project Owners Research

First, the project manager identified the key stakeholders, their representatives and their involvement in the oil drill rig scheduling process. After that, a drill rig scheduling gap analysis was conducted in the form of a workshop involving representatives from the Reservoir Development, Drilling, Wells, Exploration and Operations.

One of the objectives of the workshop was to identify stakeholder requirements, their needs, and how they measure success in order to improve the oil drill rig scheduling process. The project manager created the first draft of a stakeholder register and traceability matrix and presented it at the next team member meeting to get stakeholders' agreement.

The other objective was to map out the existing oil drill rig schedule process and identify areas for improvement. The Brain-writing approach (see glossary) was used to map the existing process using sticky notes. The notes were then transferred to a work process mapping tool for better visualization.

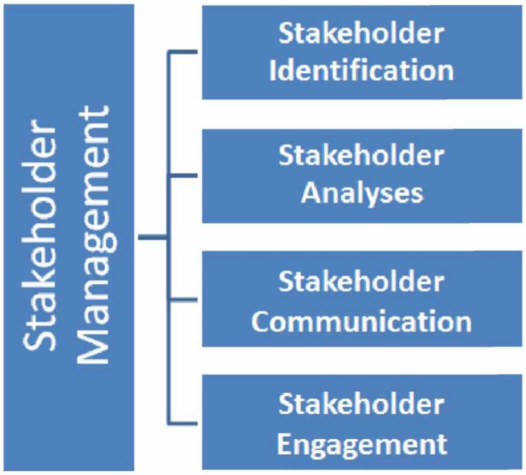


Exhibit 4: Stakeholder Management

Source: Stakeholder Management umbrella (Auraujo)

Exhibit 4 shows the stakeholder management approach, which is one of the most important elements to successfully complete this project. It is important that stakeholders be engaged in the process to gain their buy-in and they can have significant influence on decision makers in the groups they represent. The stakeholder analysis was conducted to determine which groups needed to be involved and who would best represent and influence their group.
Breakdown of stakeholder management approach:

Stakeholder Identification
- Internal stakeholders
- External stakeholder

Stakeholder Analysis
- Requirement traceability matrix
- Stakeholder register

Stakeholder Communication
- Scheduled meetings
- Distribute meeting notes
- Report progress

Stakeholder Engagement
- Required meeting participation
- Required feedback

During research, surveys, interviews of key oil drill rig schedule stakeholders, and the "Fishbone" diagram approach (see glossary) used in the workshop, two main areas for improvement were identified:
- Oil drill rig schedule process workflow
- Oil drill rig scheduling tool

The next step was assigning the team members that would determine how to resolve the previously identified issues, develop and document an improved oil drill rig scheduling process. The project team members, representing their groups were scheduled to attend bi-weekly meetings to come up with the oil drill rig scheduling guidelines document.

Organizational Survey Research

Another important step in developing the guidelines was getting feedback from the end users that are or will be affected from the oil drill rig scheduling process. The field user's feedback and improvement ideas were then taken to the project team meetings for further discussion.

Oil Drill Rig Scheduling Process Workflow

The project team, with member from all groups involved in the oil drill rig scheduling process was defined and scheduled to meet once every two weeks until the deliverables were met.

First, documented the old process in a process workflow tool and started analyzing the areas improvement identified in the workshop using the Fishbone diagram.

Top five identified areas for improvement:
- Simultaneous-operations
- Project funding
- Schedule break-in
- Schedule communication
- Oil drill rig moves

Top five identified oil drill rig schedule constraints:
- Oil drill rigs and oil drill rig move resources
- Remote location
- Weather
- Season
- Road conditions

The findings from the old process showed a single workflow for drilling, work-overs and coil tubing drilling. The project team analyzed the findings and developed an improved processes one for each activity class; drilling work-over and coil tubing drilling.

Simultaneous Operations

Simultaneous-operations are defined as multiple work activities by the same group or different groups in the same area at the same time. The simultaneous operations enable schedule optimization by executing work concurrently in order to shorten project delivery time. A quality communication management plan and risk analysis is necessary, as well as, the project owner's buy-in to ensure simultaneous-operations benefits are manifested.
Usually simultaneous operations term is confused with scheduling conflicts. However, if the project owners do not agree with the simultaneous operations scenarios, then we have scheduling conflicts that need to be resolved. These scheduling conflicts need to be identified in the early planning phase; otherwise, the consequences might be significant.

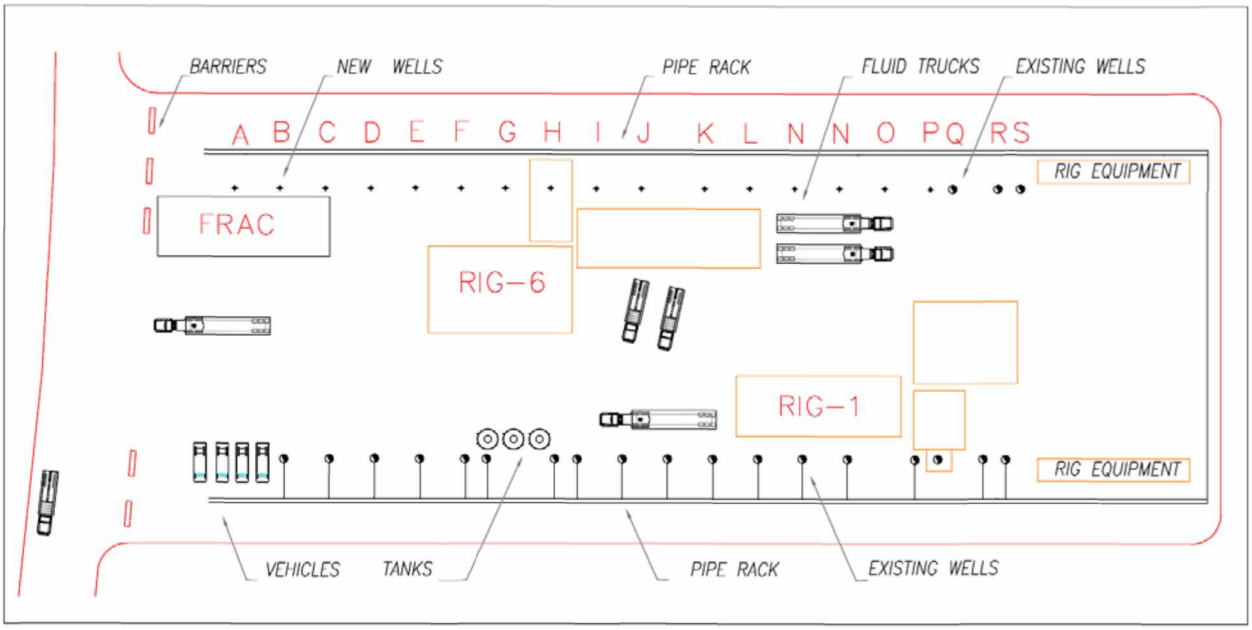


Exhibit 5: General layout scenario of a typical North Slope Drill-site.

Exhibit 5 shows a general layout scenario involving simultaneous-operation on the North Slope Alaska drill-site. In this scenario, two oil drill rigs are scheduled to operate in a very tight area. Usually, the oil drill rigs come with several loads of supporting material that are staged on the drill-sites. Additionally, hydraulic fracturing activity is scheduled at the same time. Due to the high number of rig work activities on the drill-site, the construction crews cannot access the well to complete the tie-in to the production or injection pipeline. There are numerous activities and moving parts that need to be coordinated and communicated on a daily basis in order to identify and mitigate risks and to ensure continued progress by all groups.

According to an Arctic Energy article released from two of the major North Slope oil & gas operators in July, 2006 "New technology reduces impact". (BP & COP, 2006)

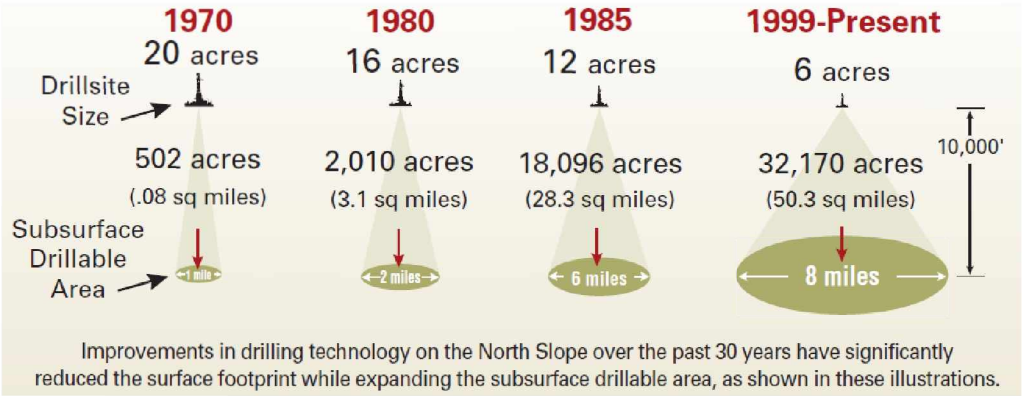


Exhibit 6: Decreasing surface footprint, expanding subsurface contact

Source: Arctic Energy article released from two of the major North Slope oil & gas operators

The article explains how smart technology reduces the environmental impact. "Drilling advances and improved waste management techniques enable the producers to significantly reduce the land area needed for oil field development. Wells that once were spaced about 120 feet apart are now drilled as close as 10 feet." (BP & COP, 2006). Exhibit 6 illustrates the decrease in the drill-site size from 20 acres to six acres in last five decades. This has resulted in tight well spacing which has increased the simultaneous-operations and HSE (Health Safety and Environments) risks. Occasionally, the activities cannot be safely executed simultaneously which increases the time required to place wells into production.

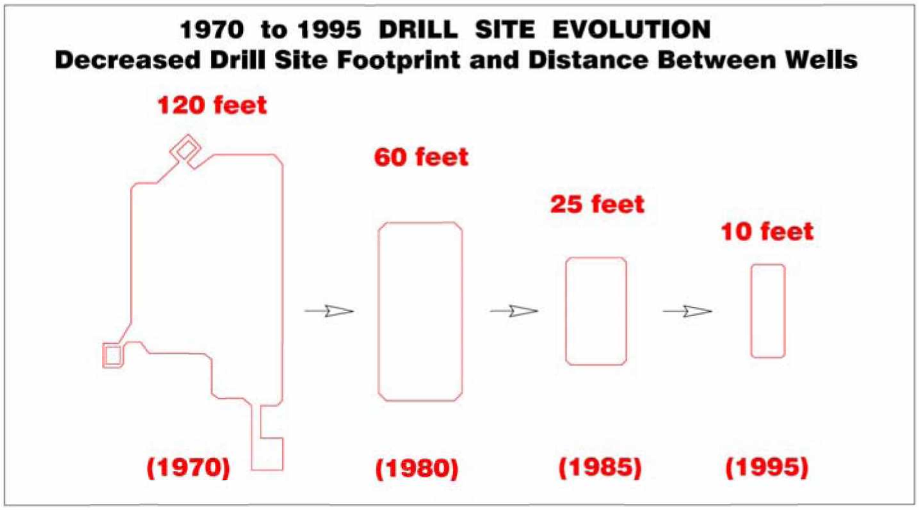


Exhibit 7: North Slope Alaska drill-site

Source: (API, 2008)

Exhibit 7 demonstrates how the shrinking of the drill-sites areas effects on decreasing the distance between wells. (API, 2008)

Schedule Sequencing

Schedule sequencing is another import step in the oil drill rig scheduling process that compliments simultaneous operations. In the past, the wells were entered in the schedule based on the predicted oil rate and other factors including their reservoir location, the direction of drilling due to geological formation and other downhole criteria. Since drilling operations cost significantly more than other projects, simultaneous-operations with other projects were not part of the oil drill rig scheduling optimization. It was typically assumed that all other activities would be scheduled after the oil drill rig work was completed.

After drilling or repairing the wells, the construction and the post drilling activities take place. That includes the well-work and the construction activities connecting the wells to the drill-site pipeline so that the oil can be transported to the facilities. A typical drill-site in the Alaska's North Slope was chosen to run scenarios and identify is scheduling work activities simultaneously could be safely accomplished to shorten the project delivery time.

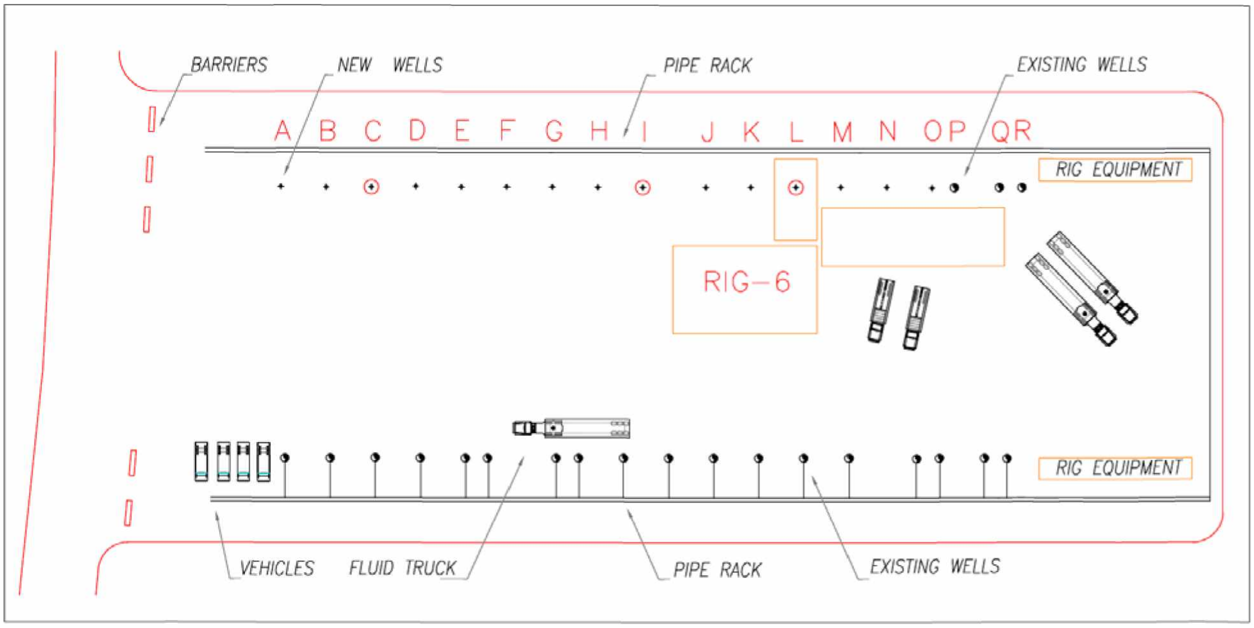


Exhibit 8: Typical Alaska's North Slope Drill-site

Exhibit 8 shows the layout drawing of the drill-site, the location of the existing and new wells, drilling oil drill rig and other drilling operation support. In this scenario the oil drill rig number 6 is drilling well "L". The next well candidates to be drilled are wells "I" and "C". Both well candidates are estimated to produce an equal amount of BOPD (barrels of oil per day).

Scenario No 1

Exhibit 9 shows the scenario number 1 of a typical drill-site on the Alaska's North Slope. In this scenario the oil drill rig number 6, previously was drilling well "L" moved to well "I". Reviewing the site drawing, it is clear that the drilling oil drill rig blocks the previous drilled well. As a result, the well-work equipment can't access to the well to complete the post oil drill rigs well-work operations. Nor can the construction activities take place. The production for wells "L" cannot take place until completing the post oil drill rig well-work and construction work to connect the well on the pipeline.

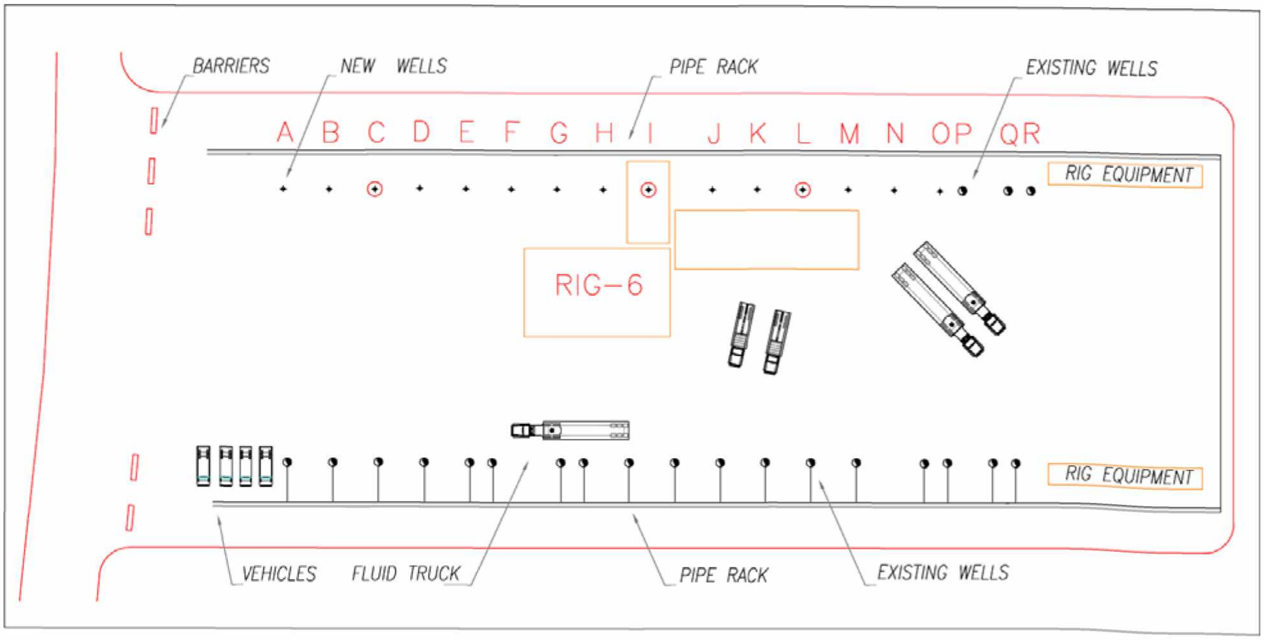


Exhibit 9: Typical Alaska's North Slope Drill-site – Scenario No 1

Due to the drilling oil drill rig covering well "L" while drilling "I" the production will be delayed at the same amount of time that the oil drill rig will be sitting on well "I".

Scenario No 2

Exhibit 10 shows the scenario number 2 of a typical drill-site on the Alaska's North Slope. In this scenario, the oil drill rig number 6 previously drilling well "L" moved to well "C" rather than well "I". Looking at the site drawing, it is clear that the drilling oil drill rig does not cover the previous drilled well "L". As a result there is enough room for the well-work equipment to access to the well "L" to complete the post oil drill rig well-work. Concurrently, the construction activities of connecting the well to the production pipe can take place as soon as the well-work is complete. As a result, the time it takes to produce oil after the drilling oil drill rig moves from the well is decreased.

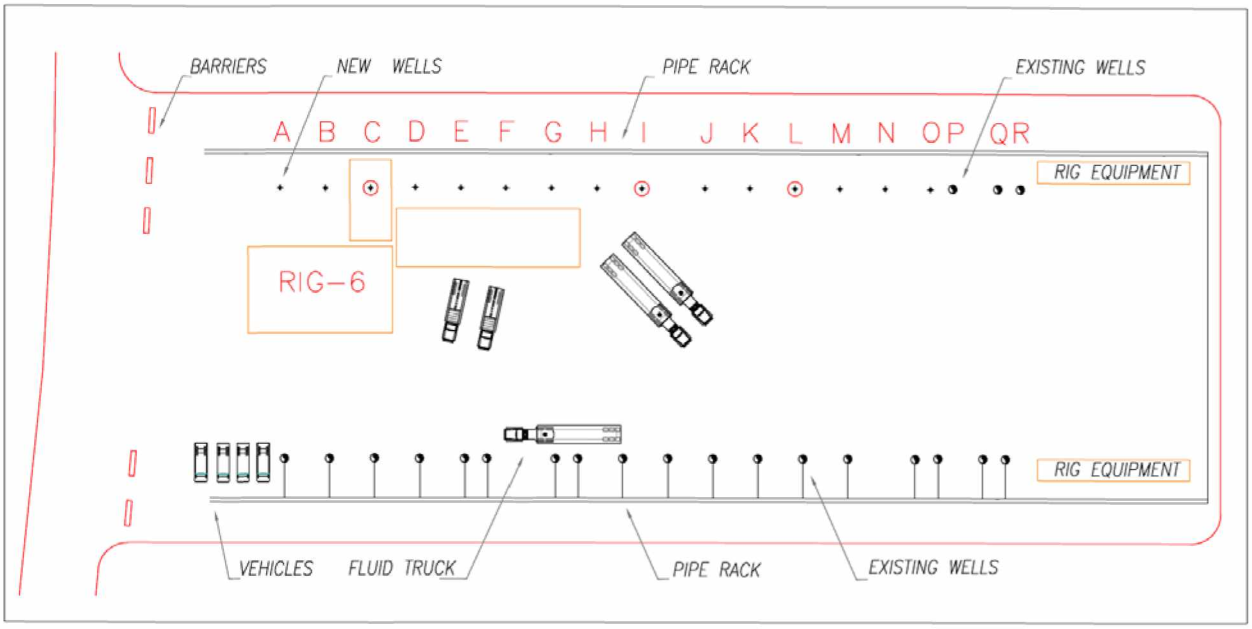


Exhibit 10: Typical Alaska's North Slope Drill-site – Scenario No 2

Based on this exercise, the scenario number 2 would work better than scenario number 1 due to placing the wells into production sooner. Using this approach on a large development project significantly accelerates the volume of oil the project will deliver in the current budget year.

One of the goals of Alaska's North Slope operators is to maintain the oil production rates. (AOGCC, Alaska's Average Daily Oil and NGL Production Rate, 2015). So, the new drilled wells must connect to the pipeline and flow the oil to the facilities as soon as possible. Sequencing activities on the drill-site is an important step in the process. It helps the project owners identify and mitigate scheduling conflicts so they can get wells on production faster. Once the well locations are identified and the wells are entered in the oil drill rig schedule, positioning the drilling oil drill rig on the drill-site and sequencing activities takes place. These events usually take place in the early phase of the mid-term planning horizon.

Project Funding

Project funding was another area identified for improvement. Typically, projects had not received funding and had to be rescheduled within days of their planned execution. These changes to the schedule caused numerous scheduling conflicts; not only in the oil drill rig schedule, but with other construction support groups as well.

Having the project funding before the jobs enters the 90 day gate provides enough time for the facilities to schedule and prepare the well for the drilling or work-over drill rigs.

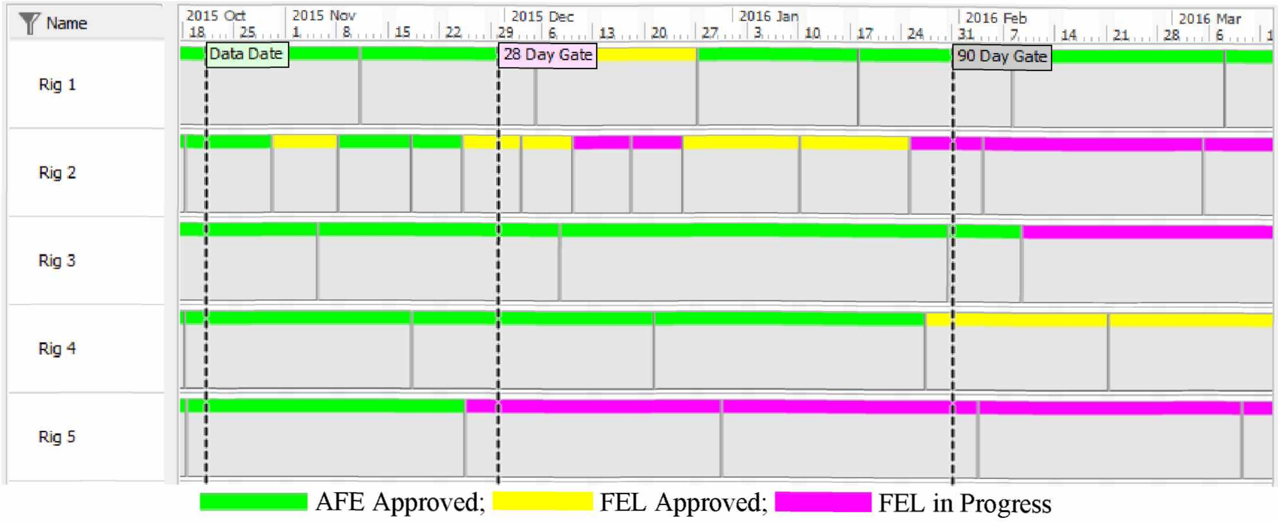


Exhibit 11: Project Funding Tracking and optimization

Exhibit 11 shows the oil drill rig schedule with funding cycle for the well-work activities. In a perfect scenario all the jobs within the 90 day gate must have fully sanctioned funding. In this schedule scenario, there are many jobs shown as "FEL in progress" or "FEL approved" (see glossary for the definitions of AFE and FEL) and many of these jobs will have to be rescheduled.

Oil Drill Rig Scheduling Process Gates

Other identified scheduling improvements were the project gates and checkpoints. Since the old process wasn't documented, many jobs were added to the schedule at any planning horizon. Many of them were not ready to be scheduled and were in conflict with other projects scheduled at the same time at the same drill-site. Exhibit 12 shows the gates and schedule horizons.

First defined the project gates: Long-range planning, Mid-range planning and Short-range planning Horizons.

- Long-range planning horizon: Greater than two years from the execution date
- Mid-range planning horizon: 90 days to 2 years from the execution date
- Short-range planning horizon: 90 days from the execution date

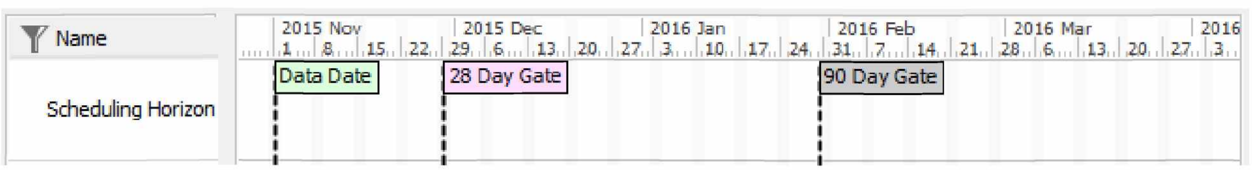


Exhibit 12: Oil drill rig schedule Horizon, Gates and Checkpoints

Then, defined the project gates and developed a checklist with the minimum requirements needed to enter or progress an activity in the schedule:

- Enter an activity in the schedule
- Break-in or progress a well in the 90 day gate
- Break-in or progress a well in the 28 day gate

In addition to drilling, work-over, and coil tubing drilling processes; a break-in process was created to manage schedule changes within the 28 and 90 day horizon.

- **Entry gate – Minimum criteria to enter a well in the schedule:**
  - Is the tentative start date and duration defined?
  - Does the oil drill rig fit on the drill-site/or well?
  - Are there any simultaneous-operations?
  - Has the EFL process started?
  - Does it compete with other jobs?
  - Are there any long-lead items

- **90 day gate - Minimum criteria to progress or break-in a job in the schedule:**
  - Does the project have funding?
  - Is the design ready?
  - Are the materials ordered and availability confirmed?
  - Are the permits identified?
  - Are there any simultaneous-operations or conflicts with other groups and projects?
  - Are the 90 day break-ins approved by the management?

- **28 day gate - Minimum criteria to progress or break-in a job in the schedule:**
  - Are the permits in place?
  - Does the project is fully funded?
  - Are there any simultaneous-operations or are the conflicts with other groups or projects solved?
  - Are the 28 day break-ins approved by the Management?
  - Are there any pre-oil drill rig work identified issues?

Since implementing the new oil drill rig scheduling process, the scheduling conflicts have not only been minimized, but eliminated. All schedule break-ins are reviewed, analyzed, and approved by management. Only "very low impact" break-ins that add value are approved. All schedule break-ins are documented and reported to management. In 2015, less than 15 activities broke-in to the 90 day gate and the five activities broke-in into the 28 day gate. There are no any proposed break-ins rejected by the management to date.

Schedule Communication

Another key area for improvement was the schedule communication and integration. Historically, different tools had been used to schedule projects and work activities. Some projects were scheduled in Primavera, other projects were scheduled in Microsoft Project, and other projects were scheduled in Microsoft Excel. These schedules were not integrated which caused numerous scheduling conflicts which led to low productivity and project cost overruns.

In order to identify scheduling conflicts in the early planning phase, all the project schedules were integrated in a single database. This enabled the project managers to visually identify scheduling conflicts and optimize the schedule for multiple work programs. As a result, many scheduling conflicts were identified and removed while optimizing the oil drill rig schedule which saved the company significant expense.

Oil Drill Rig Moves

In order to identify oil drill rig move improvements, the project manager conducted research with the onshore oil drill rigs operating on Alaska's North Slope. Based on research and personal observation, the project manager determined that the drilling and work-over rigs on Alaska's North Slope are very diverse. Some of them are built specifically for pad drilling applications, large development projects, exploration projects and others for maintenance or well repair applications. It is important to better understand the oil drill rig specifications, layout on the drill-site and the method of moving the unit.

Oil Drill Rig Classifications

- Rotary oil drill rigs
    - Rotary oil drill rigs are large machines used for drilling activities and install underground utilities in order to connect the oil reservoir with surface infrastructures.
- Coil tubing oil drill rigs
    - Coil tubing oil drill rigs are large machines used to drill and complete a well using single coil pipe. The coil tubing is directed by the injector head to the well.

- Work-Overs rigs (well repair)
  According to the research, the work-over rigs are diverse and usually have a smaller layouts, smaller capacity and sometimes weigh less compared to oil drill rigs. They are mainly used to repair the existing wells and restore them back to production or injection. A drilling oil drill rig can serve as a work-over rig if needed and many large work-over rigs can conduct drilling activities. Selection is dependent on the type of the job, capability of the oil drill rig, availability, and economic constraints.

Oil Drill Rigs Moving System

- Oil drill rigs traveling on wheels.
    - Self-propelled
        - These types of oil drill rigs use their own engines and moving system to travel from one location to another. On these types of oil drill rigs, the modules are stacked together on a moving trailer creating a massive structure housing the equipment needed to drill the wells.

    - Pulled by trucks
        - These types of oil drill rigs or units are pulled by specialized trucks to move from one location to another. Same as the self-propelled oil drill rigs, the modules are stacked together on a moving trailer creating a massive structure housing the equipment needed to drill the wells.

- Oil drill rigs traveling on "tracks"
    - Using the tracking system to travel from one location to another. They are usually large in size and designed for large pad development projects. Despite the size and the weight, these oil drill rigs are easy to drive from one location to another

- Oil drill rigs mounted on "skids"
    - Drilling oil drill rig modules are broken down into smaller components mounted on skids for easy transportation. They can be "tail-rolled" by regular bed trucks in order to travel in the road systems. These types of oil drill rigs have a larger footprint on the drill-site and designed mostly for exploration projects. Also, they are designed to be transported by helicopters if the climate changes and are useful in Artic environment operations.

- Oil drill rigs traveling on "walking system"
    - These types of oil drill rigs are designed to use the walking system to travel. They are designed for large pad development projects one same drill-site; however, they need to be broken down to smaller components to travel from one location to another.

As previously described in Exhibit 5 simultaneous operations and sequencing activities on the drill-site are important steps in the process of scheduling the oil drill rigs. Having specialized resources on the team, that understand the oil drill rig operations, rig specifications such as moving speed and the traveling ground pressure, layout on the drill-site, moving system, pays enormous dividends in identifying scheduling conflicts in the early planning phases.

Internal Company Wide Research

Another important step was reaching out and exchanging experience with other business units in order to compare the oil drill rig schedule process. Identifying how their oil drill rig scheduling process works and the values for meeting their business goals.

During research, it was identified that an oil drill rig optimization tool was used by one of the business units. After evaluating the capabilities and benefits of the software, it was agreed by the oil drill rig schedule owners to implement the tool in their business unit. Prior to adopting the new oil drill rig scheduling tool, the researcher attended one of the tool's user conferences with participants from major oil and gas operators in the United States and the world. Testimonies from these users and their feedback were important in determining the value of the tool.

One of the user's testimonies was regarding optimizing the schedule of the water used for hydraulic fracturing. Another user was optimizing the schedule to meet lease deadlines. Both cases show the importance and the benefits of the optimization tool they were using in order to succeed. Even though the companies attending the conference were using the tool for different optimization purposes, the developers were able to adopt the tool in order to meet the user's needs.

Oil Drill Rig Schedule Optimization Tool

The following section includes screen captures to demonstrate the possible optimization exercises that can be run in an oil drill rig scheduling tool.

Oil Drill Rig Move Optimization

This section shows the schedule optimizing based on the oil drill rig move distance. The oil drill rig schedule optimization tool can be programmed to optimize for the shortest travel time; saving both time and money required to move from one drill-site location to another.

Exhibit 13 shows the oil drill rig schedule with travel distance. In this scenario, the schedule is optimized by allocating the drilling activities grouped to the same drill-site. Oil drill rig move costs are saved by drilling on the same drill-site. The oil drill rigs move more often from one drill-site to another; however, this scenario is showing numerous oil drill rig moves at the same drill-site.

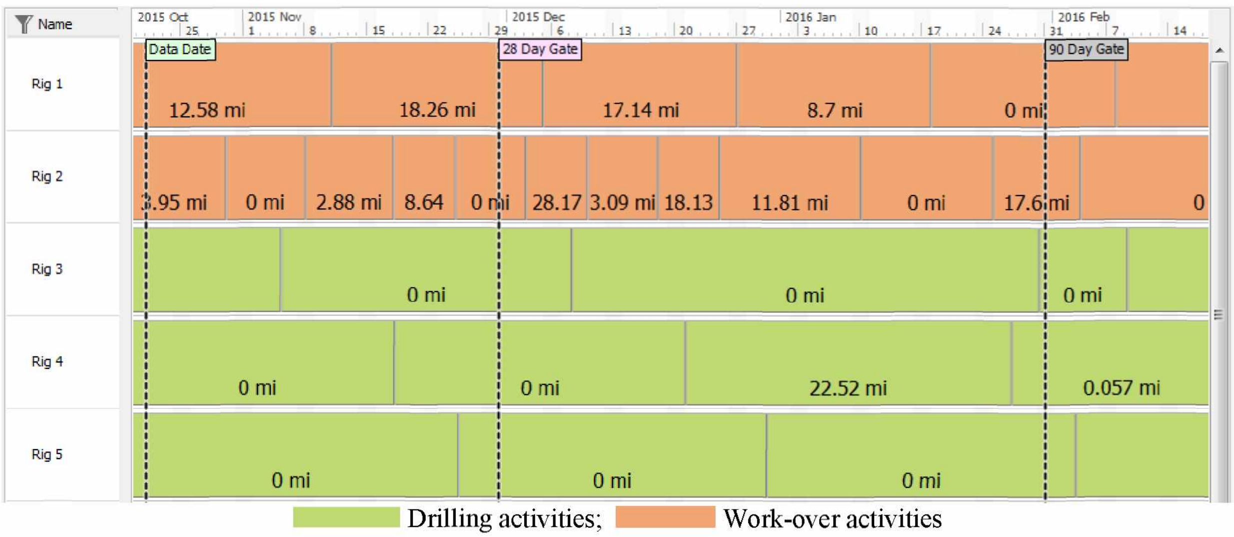


Exhibit 13: Oil Drill Rig Schedule Travel Distance

Simultaneous-Operations Optimization

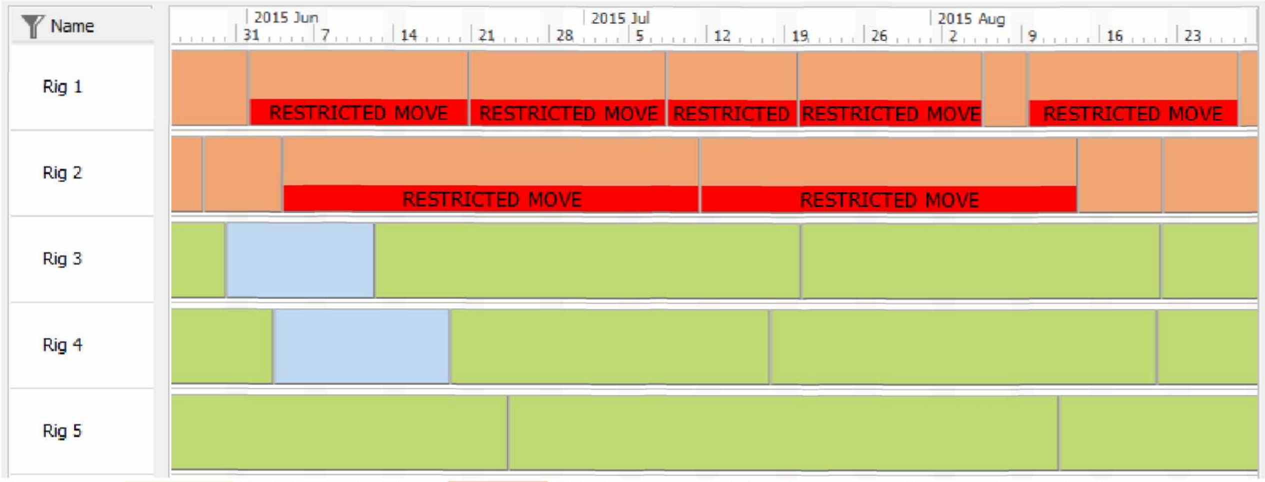
This section shows a scenario of monitoring scheduled activities on the drill-sites, in order to identify and mitigate oil drill rig schedule conflicts. On scheduling tools it is challenging to visualize and find out how many activities are scheduled at the same drill-site at the same time versus optimization tools which can be programmed to show multiple views. The "site view" is preferred because it shows scheduling conflicts and simultaneous-operation at the same drill site location.

Exhibit 14: Site schedule simultaneous operations

Exhibit 14 shows a site schedule and the activities occurring on individual drill-sites at the same time. In this scenario, site 1 shows simultaneous-operations between the drilling rig, work-over rigs and construction crews. Site 2 shows simultaneous-operations between work-over rigs, construction crews and well-work shown in red. Once the simultaneous-operations are identified, the drill-site layout drawing will be reviewed in order to make sure that there are no conflicts. If there are any conflicts, high priority activities are scheduled to take place first. Based on actual data, 60% of the oil drill rig schedule benefits are captured due to identifying schedule conflicts of activities being at the same site at the same time. The savings are valued and plotted to reporting tools for management review and approval.

Road Conditions Optimization

Due to the roads being unstable in the summer, it is best to avoid oil drill rig moves to certain drill-sites. The oil drill rig scheduling tool can be programmed to flag these events. Also, if the wells are drilled in the winter and there is no road access, the tool can be programmed to flag these events as well.
Exhibit 15 shows the oil drill rig schedule with restricted summer oil drill rig move flags. Oil drill rig 1 and oil drill rig 2 have activities associated with summer oil drill rig move. Once these events are identified, the owners decide to optimize the schedule and avoid oil drill rig moves in the restricted areas or prepare the roads to handle the oil drill rig moves. The decision is made based on the ground pressure of the drilling units and the weather conditions.



Drilling activities; Work-over activities; Coil tubing activities

Exhibit 15: Restricted oil drill rig move

20% of the oil drill rig schedule benefits are captured as of result of identifying oil drill rig moves in restricted areas. The benefits are valued and plotted to reporting tools for management review and approval.

Production Optimization

This section shows the schedule optimization for the wells with the highest production rate to drill or repair first in order to bring them in production. According to the State of Alaska oil production rate charts from 1960 to 2010, the oil production is declining. The owners are challenged to maintain the field production to keep the Trans-Alaska Pipeline System (TAPS) open. As a result, new drilling technology has been implemented and new fields are being drilled. Moreover, the work-over activities are increased to repair broken wells and maintain production.

Alaska North Slope Operators Research

Since the environmental and geographical area has a significant effect on the scheduling process, it was advised to reach out and consult with other Alaska's North Slope operators and partners. No specific information about the oil drill rig scheduling process was identified during this research. (2014-2015 Winter Drilling Program Lease Plan of Operations Approval, Exploration Phase)

The research found that one of the oil and gas producers uses a scheduling tool to schedule the project lifecycle for wells. The schedule includes important steps such as the project study, environmental, engineering, permitting, logistics, ice road & ice pad construction, and drilling the wells. Two other oil and gas producers were focused specifically on the execution part of the schedule, drilling wells and wells maintenance.

Academic Research

Two main areas of the academic research were the web and survey research. The web research was focused in rig oil drill rig papers, articles and regulatory agency articles and documents. The survey research was focused on information provided by the subject matter experts, project managers, contractors and representatives of oil and gas operators in the Alaska's North Slope.

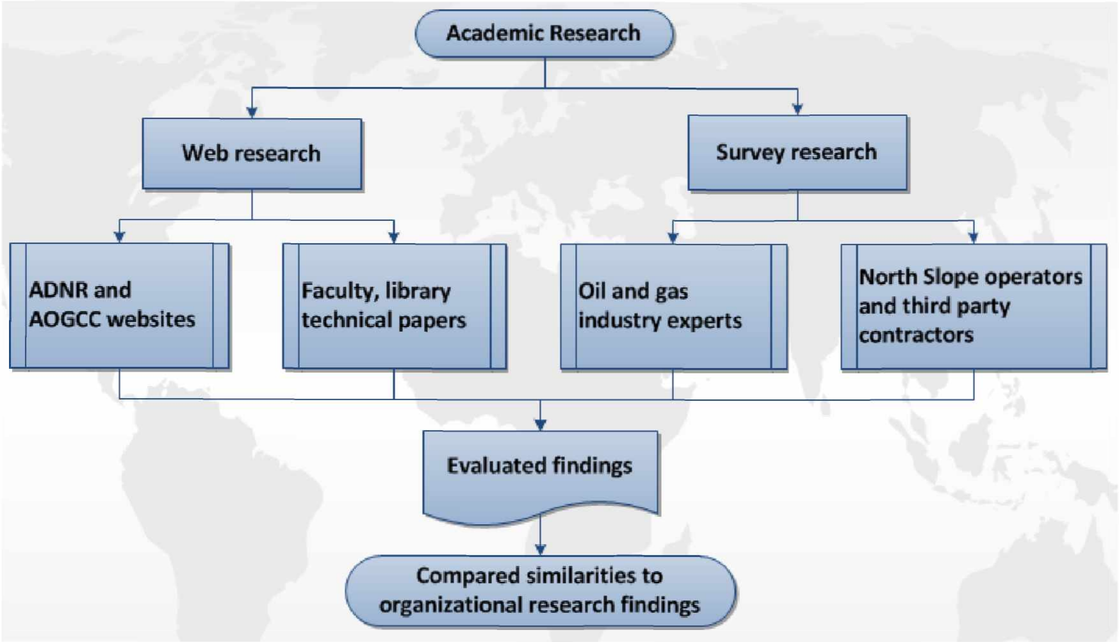


Exhibit 16: Academic research

Exhibit 16 shows the graphical representation of the academic research approach. The results of the academic research were evaluated and prioritized. The academic research findings were compared to the oil drill rig organizational research finding. As of result, scheduling challenges, differences and similarities were identified.

Web Research

This research was focused on research papers about oil drill rig scheduling process. Minimal information regarding the oil drill rig schedule process in Alaska's North Slope exists. However, there were a couple of articles regarding the oil drill rig schedule optimization. One of the articles complemented the oil drill rig optimization tool findings listed in the organization research section.

The project manager conducted research on papers and articles for oil drill rig scheduling in an Arctic environment, searched local and federal agency requirements for planning and executing projects in Alaska's North Slope, and developed a recommended oil drill rig scheduling process based on researchers experience in remote projects working for different organizations and operators new to the Arctic.

North Slope Alaska, Land Drilling & Work-Over Oil Drill Rigs

Alaska is well known as remote area and road access are limited. Drilling activities can take place in the remote areas and are usually not accessible all year. As a result, specialized equipment and trained personnel are needed to transport the oil drill rigs from one drill-site to another.

According to the oil and gas activity charts for the active drilling and work-over rigs (AOGCC, Work-Over Activities, 2015) in past 10 years, there is an increase of oil drill rig work activities in last few years. Since the fields are getting older and the production is declining, the project owners are challenged to maintain the production steady.

- **New drill-sites development.** In 2015, one of the producers operating in the Alaska's North Slope drilled the first wells and is producing oil from two new drill-sites. Also, they are progressing with construction of a third drill-site. Same operator announced in fourth quarter 2015 the approval for developing an additional new drill-site.

- **Increase of coil tubing development wells.** The coil tubing oil drill rigs have improved during last few years drilling as many as eight branches per well. (BP & COP, 2006)

- **Repair and service the wells that declined or stopped production.** Since the field is getting older there is an increase in the number of work-overs wells. (AOGCC, Work-Over Activities, 2015)

The demand for work-over rigs is high, since supporting the coil tubing drilling programs with coil tubing drilling set-ups. Due to the decreasing drill-sites surfaces, a large number of wells are drilled on 15', 12.5' or even 10' spacing. (API, 2008). As a result, many of the old work-over rigs are not suitable for these applications. They might be able to enter in small spacing; however the offsetting well's shelter must be removed. As a result, the wells might need to be secured from freezing in the winter months and more wells will be shut-in. This process is costly and the owners prefer to contract or even build work-over rigs that work in tight well spacing in order to avoid shutting-in wells.

One of the major operators in the North Slope contracted two new work-over rigs in the last few years. Another operator is using oil drill rigs to serve as work-over to achieve the business goals and achieve production targets. However, the consequences of using these units for work-over applications are higher costs and longer move time during the summer.

Drilling Contractors and Qualified Labor Force

The labor force for the oil drill rigs is manageable for long terms contract oil drill rigs. The personnel are hired, trained, and embedded with experienced personnel until they meet company requirements. The hiring process for the new built rigs is managed by allocating experienced labor to help with the startup phase and train the new hires.
The hiring process for the exploration projects is slightly different. The exploration projects, mostly take place during the ice road season and since the exploration season is very short, the contractors struggle to find qualified labor on time. This doesn't affect the oil drill rig scheduling process; however it can delay the startup of development or exploration projects and can result in lower productivity.

Oil Drill Rig Move Resources

The oil drill rigs in the North Slope Alaska are diverse. They are built from different fabricators and have different move system types. Most common, are the oil drill rigs that are pulled with costume made moving trucks. As a result, specialized companies and equipment are used to move the oil drill rigs from one location to another. Limited resources are capable of moving the oil drill rigs in Alaska's North Slope.

During the start of the ice road season, the moving companies are focused on transporting the oil drill rigs and equipment on to the ice. At the end of the ice road season, the moving companies are focused on transporting the oil drill rigs and equipment off of the ice. As a result, many of the work-over and development oil drill rigs must wait for equipment or labor to become available.

Remote Location / Accessibility

The Arctic Energy article shows how the use of ice roads and ice pads significantly reduces harm to the tundra. Since the exploration season is limited to a short window, ice roads are built to support the exploration drilling programs. Instead of constructing gravel pads for exploration drilling, temporary pads of ice are constructed. These ice pads disappear in summer leaving no damage to the sensitive tundra. (BP & COP, 2006)

A number of drill-sites are built for multiple seasonal exploration or development campaigns. Many drill-sites are accessible by ice roads or barge only. Others are accessed by ice roads and barge.

Exhibit 17: Typical multi seasonal remote location on Alaska's North Slope.

Source: Pt Thompson Project Images, 2010

Exhibit 17 shows the central pad of the Pt Thomson project in 2010. The equipment mobilization and demobilization including drilling support fluids and fuel were transported during the ice road and barge seasons. Some of the equipment including a drilling tent was transported by helicopter.

According to a study conducted by the Alaska Department of Natural Resources, tundra operation season is getting shorter compared to previous decades. Since the exploration window is getting shorter, the owners are only able to drill and evaluate one or two wells per season. (ADNR). That can be very costly and it is very difficult to justify decisions on an economic basis.

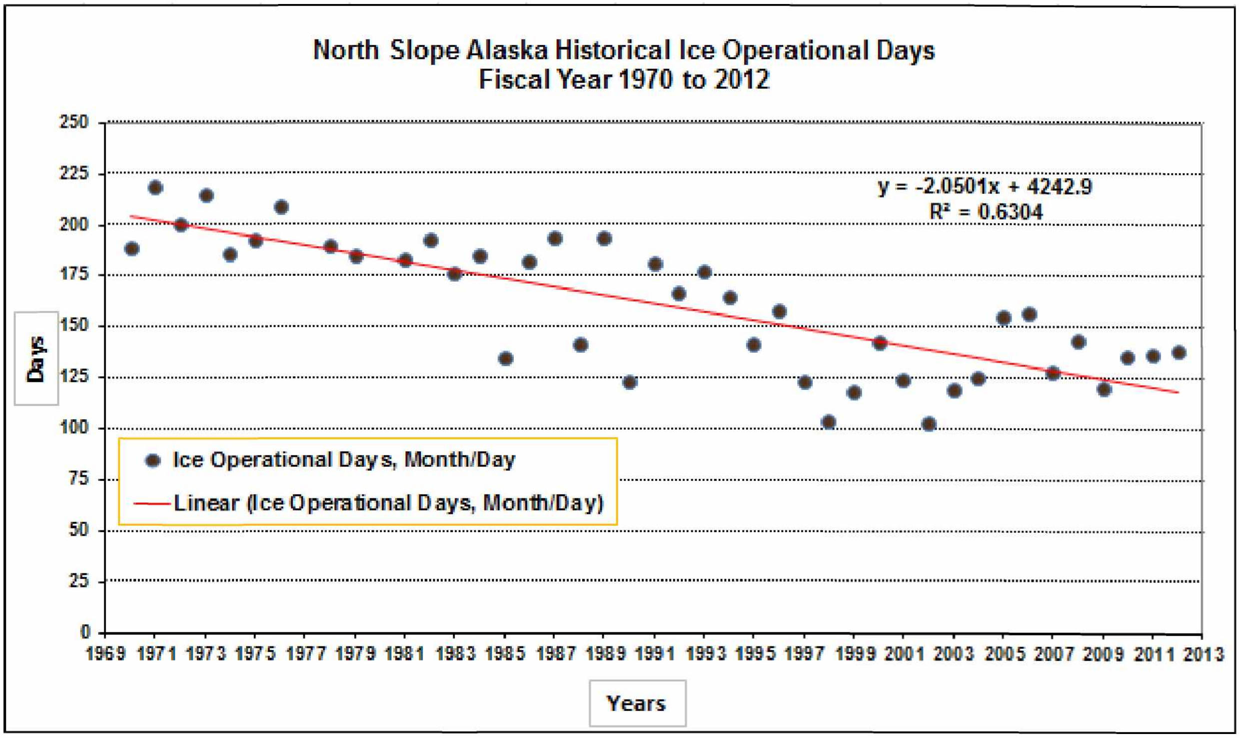


Exhibit 18: Length of the winter tundra travel season 1970 to 2012

Source: DNR - Division of Lands researchers' observation

Tundra open and closed dates were plotted on Exhibit 18. The chart shows the decrease of tundra operational season. According to the data analysis, the average tundra travel duration is:

- From 1970 to 1979 - 199 days
- From 1980 to 1989 – 176 days
- From 1990 to 1999 – 145 days
- From 2000 to 2009 – 133 days
- From 2000 to 2013 – 137 day

Season

According to the Arctic Energy article released from two oil & gas operators in July, 2006, the base material of the North Slope road system is gravel. In the winter, the road sections are frozen and it is easier for the oil drill rigs to move from one location to another. In summer, during heavy raining season, the roads have lower structural ratings and fail which causes travel time delays. Many roads perform better than others. The roads with the worst performance record are flagged in order to avoid summer delays. The oil drill rig schedule uses these flags to minimize moves across weak roads.

Exhibit 19 shows the ice conditions and thickness of lakes, rivers and the ocean, the timeframe for offshore drilling and ice roads and the breakup seasons of the lakes, rivers and the ocean. (BP & COP, 2006). The drilling programs starts in late January to early February and completes by the end of April.

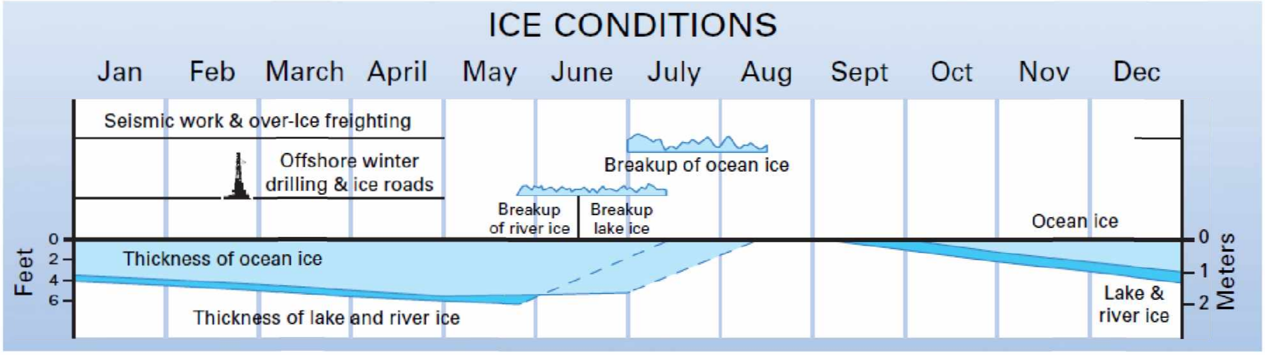


Exhibit 19: Ice conditions

Source: Arctic Energy article released from two oil & gas operators in July, 2006

Weather

According to the Arctic Energy article for 56 days in midwinter, the sun never rises above the horizon on the North Slope. But in the summer, the arctic coast enjoys 75 days when the sun never sets. (BP & COP, 2006). Exhibit 20 shows the daylight charts. In the Alaska's North Slope, the oil drill rigs operate 24 hours per day and the daylight/darkness condition will not affect the drill rig work activities or the drill rig moves.

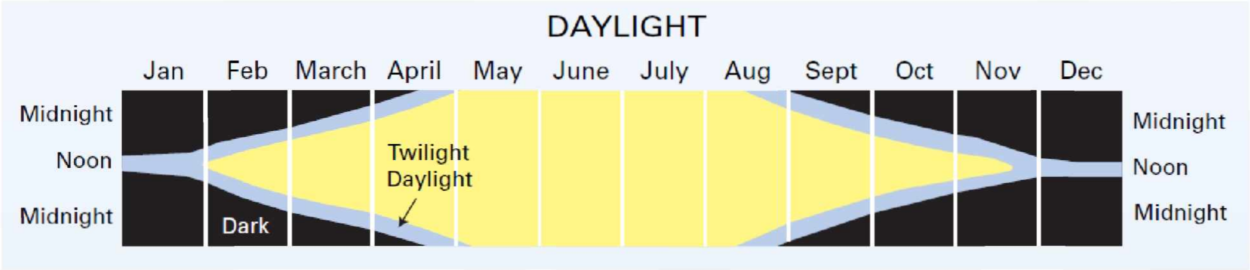


Exhibit 20: North Slope Alaska Daylight

Source: Arctic Energy article released from two oil & gas operators in July, 2016

According to the Arctic Energy article, winter air temperatures are as low as minus 68 degrees Fahrenheit and high winds can drive the chill factor to minus 115 degrees Fahrenheit. In summer, temperatures can occasionally increase to 80 degrees Fahrenheit. However, it can snow any day of the year along the Arctic coast. (BP & COP, 2006)Although winter snowfall is generally less than 3-1/2 feet, snowdrifts can be more than 20 feet high causing construction project delays.

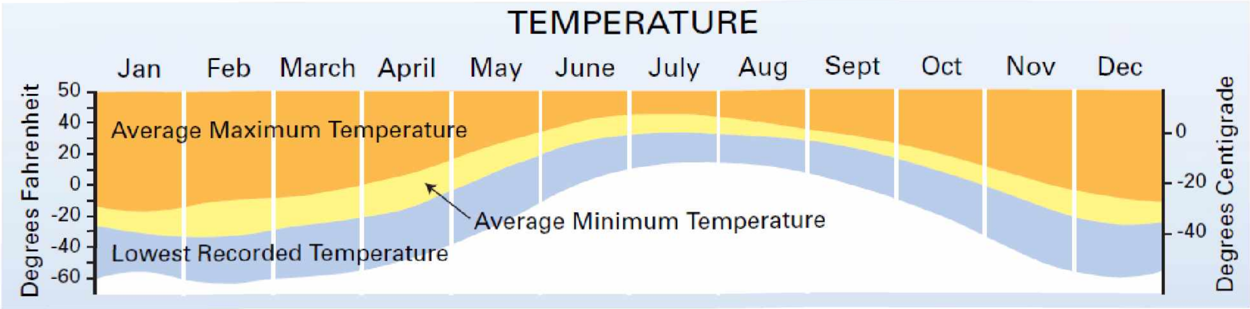


Exhibit 21: North Slope Alaska Temperature

Source: Arctic Energy article released from two oil & gas operators in July, 2016

Even though the weather is one of the most important factors and has significant affect in scheduling work activities in the Alaska's Slope North, it holds less priority in the oil drill rig scheduling process. The oil drill rigs are fully winterized and the weather will not significantly affect drilling operation unless moving from one location to another or waiting for drilling fluids delivery. During oil drill rig moves, rig up and rig down, weather days contingency is added to these activities.

Oil Drill Rig Schedule Optimization

Though the drill rig scheduling is an important function in oil and gas industry, minimal literature exists for oil drill rig scheduling processes. Most of the articles found regarding the oil drill rig scheduling reference the process of scheduling wells rather than oil drill rigs.

One of the most interesting findings during research was the theses article regarding the oil drill rig schedule optimization from Salem Hamoud Al Ghrabi, October 2011. According to his study, there were different forms of drilling rig schedule optimization:

- "Optimizing time: The author explains the need to have a drilling oil drill rig schedule such as to make sure that all the wells are drilled in the shortest time. This schedule includes oil drill rig speed, distance between wells, and the drilling operation time. The optimization ensures the operation is completed in the shortest time, and can help release oil drill rigs ahead of time to save cost." (Grabi, Salem Hamoud Al, 2011)
- "Optimizing production: The author explains how to get the maximum production rate, and/or improve the production rate in the shortest time. This is focused on the well production rate. This optimization strategy helps increasing the production in case of emergency need." (Grabi, Salem Hamoud Al, 2011)
- "Optimizing drilling oil drill rigs: The author explains the need to drill the wells with a minimum number of drilling oil drill rigs. This optimization is based on shortage of drilling oil drill rigs. (Grabi, Salem Hamoud Al, 2011)
- "Optimizing oil drill rig move: The author explains how to produce rig schedule with the minimum drill rig movement. This is focused on the distance between wells, and the current oil drill rig location." (Grabi, Salem Hamoud Al, 2011). In this exercise the author ran multiple scenarios optimizing the oil drill rig moves base on well coordinates. This is an innovative optimization concept if traveling off roads, however in the North Slope Alaska the oil drill rigs move from one location to another are using road system.
- "Optimizing cost: The author explains hot generating the drilling rig schedule with the most effective cost". (Grabi, Salem Hamoud Al, 2011)
- "Specific optimization: The author explains other specific reason schedule optimizations, such as optimizing for a specific fluid type, or specific group of wells." (Grabi, Salem Hamoud Al, 2011)

Survey Research

In order to identify challenges, risks and constraints that project managers encounter while scheduling work activities; a survey was sent to subject matter experts, project managers, contractor and representatives of a North Slope operator. The survey results were used to identify and prioritize their most significant challenges.

Survey analysis

This survey was conducted to investigate the challenges that the project manager encounter while scheduling work activities in the Alaska's North Slope. The purpose of the survey was to find mutual scheduling challenges and the existing oil drill rig schedule process effects on other projects.
A survey template was sent to 23 oil and gas professionals, project managers, engineers and schedulers experienced with North Slope Arctic environment projects. It was agreed that the survey was conducted for academic study for the University of Alaska Anchorage and neither individual's names nor their company names would be exposed. The individuals were chosen among different companies, contractors and major oil and gas operators in the North Slope Alaska.
The first surveys were sent out in February, 2014 and all their responses were collected by April, 2014. About 43% responded to the survey and ranked their top five to ten challenges, major risks and constraints. 80% of the responders provided general answers. 20% of the responders requested more information on the capstone project topic and expressed their point of view about the challenges they had with the oil drill rig scheduling.
The results of the survey were compared with the oil drill rig scheduling challenges in order to find out the differences and similarities. These are the responses that were received from the survey:

- Simultaneous operations
- Weather
- Resource Competition
- Labor
- Equipment
- Schedule
- Personnel Skills
- Material
- Season
- Funding cycle
- Remote locations
- Productivity
- Logistics
- Operations
- Tracking projects
- Scheduling
- Schedule integration
- Resource assignments
- Cost
- Lodging
- Scope change
- Communication
- Resource competition
- Oil drill rig moves

Research Survey Data Analysis				
No	Challenges	Responses	Responders	%
1	Simultaneous Operations	5	10	50
2	Weather	4	10	40
3	Resource Competition	4	10	40
4	Labor	4	10	40
5	Equipment	3	10	30
6	Schedule	3	10	30
7	Personnel skills	3	10	30
8	Material	3	10	30
9	Season	2	10	20
10	Funding cycle	2	10	20

Exhibit 22: Research Survey Data Analysis

Exhibit 22 shows the top ten common challenge results that survey responders face while scheduling work activities in the Alaska's North Slope.

Drilling oil drill rig and the support equipment have a large layout on the drill-site and sometimes affect other project activities. According to survey research, the oil drill rigs and scheduling process are not in the top ten challenges that affect scheduling project activities.

Conclusions

This project explains all the steps required to produce a guideline for scheduling oil drill rig work activities in a remote Arctic environment. Two of the improvement areas were the oil drill rig schedule process workflow and implementing an oil drill rig schedule optimization tool.

Rig schedule processes

Three rig schedule planning processes were created for each activity class: drilling, work-over and coil tubing drilling. Although there are many similarities between the three processes, the differences are significant enough that they were addressed separately.

Also, identified the project gates and developed a checklist with the minimum criteria to enter an activity in the schedule, break-in or progress a well in the 90 day gate, and break-in or progress a well in the 28 day gate. In addition to the drilling work-over and coil tubing drilling processes, a break-in process was created to manage schedule changes within the 28 and 90 day horizon.

- **Drilling (new wells) process**
  In this application, there are no existing wells or well preparation. The construction crews must complete the surface piping work to flow the well to the production facilities.

- **Work-over process**
  In this application, there are existing wells tied into production facilities. The surface piping needs to be removed, sometimes reconfigured and installed after the work-over rig services the well.

- **Coiled Tubing Drilling process**
  Similar to the work-over application, there are existing wells tied into production facilities. The surface piping needs to be removed, sometimes reconfigured and installed after the work-over rig services the well. Most of the time, the coil tubing rig follows the work-over rigs that prepares the well prior to coil tubing drilling.

Due to corporate proprietary restrictions, the rig scheduling process documents are not included in the report. However, a high level oil drill rig schedule process description will be included to illustrate the process work flow.

High Level - Oil Drill Rig Scheduling Process

Mid-Range Planning Horizon Steps:

- Identify the well
- Complete schedule Entry punch-list
- Start the Front End Loading process (FEL)
  - Drilling FEL
  - Construction FEL
- Enter well into the rig schedule
- Complete the 90 day Gate review punch-list
  - Punch-list complete: Progress into the 90 day gate
  - Punch-list not complete: Reevaluate and reschedule the well

Short -Range Planning Horizon Steps:

- Complete pre rig work
- Complete the 28 day Gate break-in if any
  - Complete punch-list
  - Obtain management approval
  - Implement the change
  - Communicate change

Since implementing the new oil drill rig scheduling process, the scheduling conflicts are not only minimized, but nearly eliminated. All schedule break-ins are reviewed analyzed and approved by management. Only "very low impact" break-ins that add value are approved. All schedule break-ins are documented and reported to management. In 2015, less than 15 activities broke-in to the 90 day gate and only five activities broke-in into the 28 day gate. There have been no proposed break-ins rejected by management to date.

Rig Schedule Optimization Tool

The new drill rig optimization tool was identified and implemented. The tool is programmed to meet the stakeholder's needs identifying simultaneous operations opportunities and scheduling conflicts. Currently, the company optimizes the schedule based on travel distance, simultaneous-operations and road conditions.

As a result of optimizing the schedule using the tool, at least 15 scheduling conflicts were identified and mitigated in the early planning phase saving the company unnecessary expenditures.
Based on actual data, 60% of the oil drill rig schedule benefits are captured by identifying conflicts between activities scheduled at the same site and time. Due to optimization of the schedule, 20% of the oil drill rig schedule benefits are captured by identifying oil drill rig moves in restricted areas. The values of these benefits are plotted to reporting tools for management review and approval.

Implementing the proposed guidelines has improved the oil drill rig scheduling process, roles and responsibilities are more clearly defined, communication among groups has been improved and support groups have adequate time to complete their work. Results include reduction of oil drill rig move downtime and a reduction in the time to produce oil after the oil drill rig leaves the well site. As a result of improving the rig scheduling process and implementing the rig optimization tool, the company saved millions of dollars in 2015.

Recommendations

The oil drill rig optimization tools are been used widely in the oil and gas industry and has significantly improved the oil drill rig scheduling process. It is worth investing in the oil drill rig optimization tool achieve the business needs.

In order to implement a successful rig scheduling process to achieve the business goals, ensure that the objective are understood and stakeholders agree to the terms and conditions and follow the process.

Project owners might have different philosophies about the rig scheduling process. However, the process workflow must be as simple as possible in order to visualize the steps.

Develop and implement a solid break-in process in order to avoid unnecessary schedule changes within 28 day and 90 day gate horizons. Validate the schedules changes, identify and mitigate the risks for break-ins prior to proposing the changes. Document and communicate the changes to the users and all support teams in order to avoid any potential issues.

Future research

The rig scheduling optimization tool has paid significant benefits to the organization. Due to a large number of constraints, the optimization is done manually. It is worth investigating and implementing the automated optimization, perhaps starting with the long-range (two to five year horizon) planning.
Uploading the long-range planning in the tool and predicted production forecast for the new wells to be drilled on the optimization tool would help in making decisions to meet company goals.

References

Arctic Energy – For Today and Tomorrow: (BP & COP, 2006)
http://alaska.conocophillips.com/Documents/ArcticEnergy.pdf
(Accessed on September, 2015)

Division of Oil & Gas – 2014 Annual Report: (ADNR, 2014 Annual Report, 2014)
http://dog.dnr.alaska.gov/publications/documents/annualreports/2014_annual_report.pdf
(Accessed on September, 2015)

Drilling Rig Schedule Optimization: (Al Gharbi)
http://gradworks.umi.com/15/33/1533777.html; http://search.proquest.com/docview/1314580515
(Accessed on September, 2015)

Examples of technology at work in the Arctic: (API, 2008)
http://www.api.org/~/media/Files/Policy/Exploration/environment/Technology_at_Work_Arctic.pdf
(Accessed on September, 2015)

Foundation and Outlook of Alaska Oil and Gas E&P Project Execution Strategies: (Blanton, 2013).
Project Management Library, University of Alaska Anchorage
(Accessed on April, 2014)

Repsol 2014-2015 Winter Drilling Program Lease Plan of Operations Approval, Exploration Phase: (Repsol)
http://dog.dnr.alaska.gov/permitting/documents/northslope/operationplans/2014/20141226_lons_14-006_repsol_2014-15_winter_drilling_program_plan_of_operations_approval.pdf
(Accessed on September, 2015)

North Slope Tundra Travel and Ice Road Construction: (ADNR)
http://www.housemajority.org/coms/cli/dnr_menefee_schultz.pdf (accessed on September, 2015)

Oil and Gas Activity Charts: (AOGCC, Active Drilling and Workover Rigs for Each Quarter, 2015); (AOGCC, Exploratory Wells, 2015); (AOGCC, Workover Activities, 2015); (AOGCC, Development and Service Wells, 2015); (AOGCC, Alaska's Average Daily Oil and NGL Production Rate, 2015)
http://doa.alaska.gov/ogc/ActivityCharts/achtindex.html
(Accessed on September, 2015)

Stakeholder Management umbrella: (Auraujo)
http://sustainet.com/stakeholder-management/stakeholder-management-umbrella/
(Accessed on October, 2015)

Tundra Model Project: (ADNR, Tundra Travel Modeling Project)
http://dnr.alaska.gov/mlw/tundra/TundraModelReport.pdf (accessed on September, 2015)

Unit Working Interest Ownership, North Slope: (ADNR, Unit Working Interest Ownership, North Slope, 2015)
http://dog.dnr.alaska.gov/publications/documents/northslope/ns_wio_online_201509.pdf
(Accessed on September, 2015)

Glossary

AFE - Appropriation for Expenditure, it is the decision gate at the end of the third Front-End-Loading (FEL) stage, as shown in Exhibit 20. (Blanton, 2013)
FEL – according to (Blanton, 2013) it is a term coined by the DuPont Company. Front-End-Loading is the work process that prepares a project for financial investment decisions and the most business-effective way to carry-out the project work. FEL is usually formatted into three stages: business planning, facility planning, and project planning.

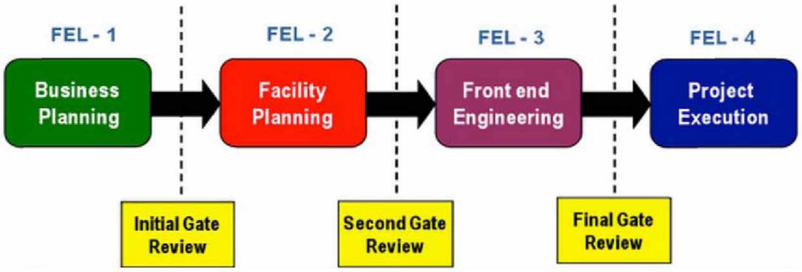


Exhibit 23: Front End Loading Process

Source: Front End Loading Process Images

Fishbone diagram – (Cause–and–Effect Diagram, Ishikawa Diagram) illustrates the relationship between a subject (effect) and the factors connected to it (causes). The diagram looks like the skeleton of a fish, the bones are factors combined to form categories (causes). The categories shape the topic that is placed in the head of the fish (effect). (Blanton, 2013)

Brain-writing - Is a group structured brain-writing technique aimed at aiding innovation processes by stimulating creativity developed by Bernd Rohrbach who originally published it in a German sales magazine, the Absatzwirtschaft, in 1968. (Wikipedia)

Oil drill rig – An oil drill rig is a machine which creates holes in the earth sub-surface and installs underground utilities. (Wikipedia)

Well Completion – the process of installing underground utilities

Rotary oil drill rigs - Large machines used for drilling activities and install underground utilities in order to connect the oil reservoir with subsurface infrastructures. (Wikipedia)

Coil tubing oil drill rigs – Large machines used for drilling activities and install underground utilities in order to connect the oil reservoir with subsurface infrastructures. (Wikipedia)

Coiled tubing - Is a long metal pipe, normally 1 to 3.25 in (25 to 83 mm) in diameter which is supplied spooled on a large reel. (Wikipedia)

Oil well - An oil well is a boring in the Earth that is designed to bring petroleum oil hydrocarbons to the surface.

Operator/Owner - oil and gas entity, "who has the oil drill right to drill into and produce from a pool and to appropriate the oil and gas the person produces from a pool for that entity and others" (Blanton, 2013)

Producer – "the owner of a well or wells capable of producing oil or gas or both" (Blanton, 2013)

Break-in – Break-in jobs is a term used for identifying jobs that are added to a schedule without proper lead time allowed for planning and scheduling

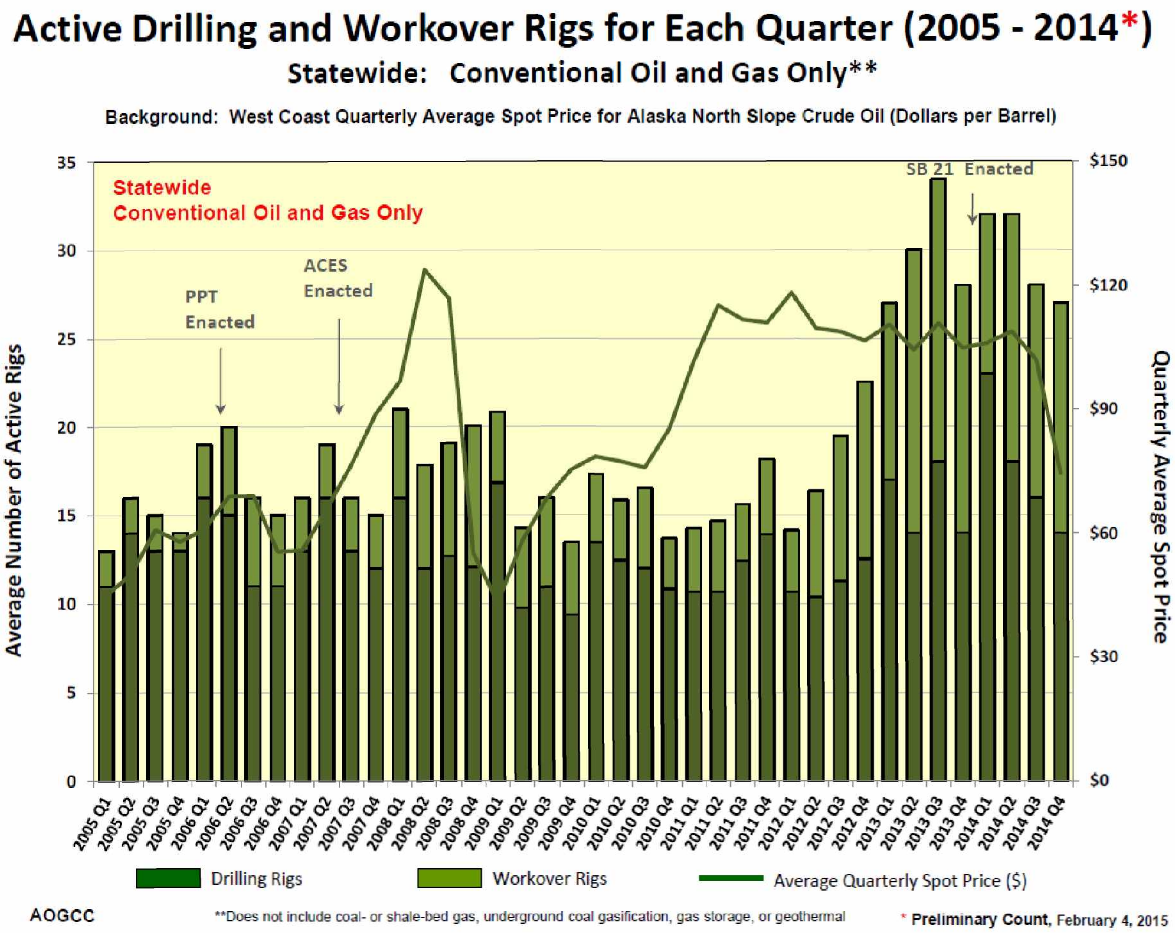
Work-over – Well maintenance or repair activity

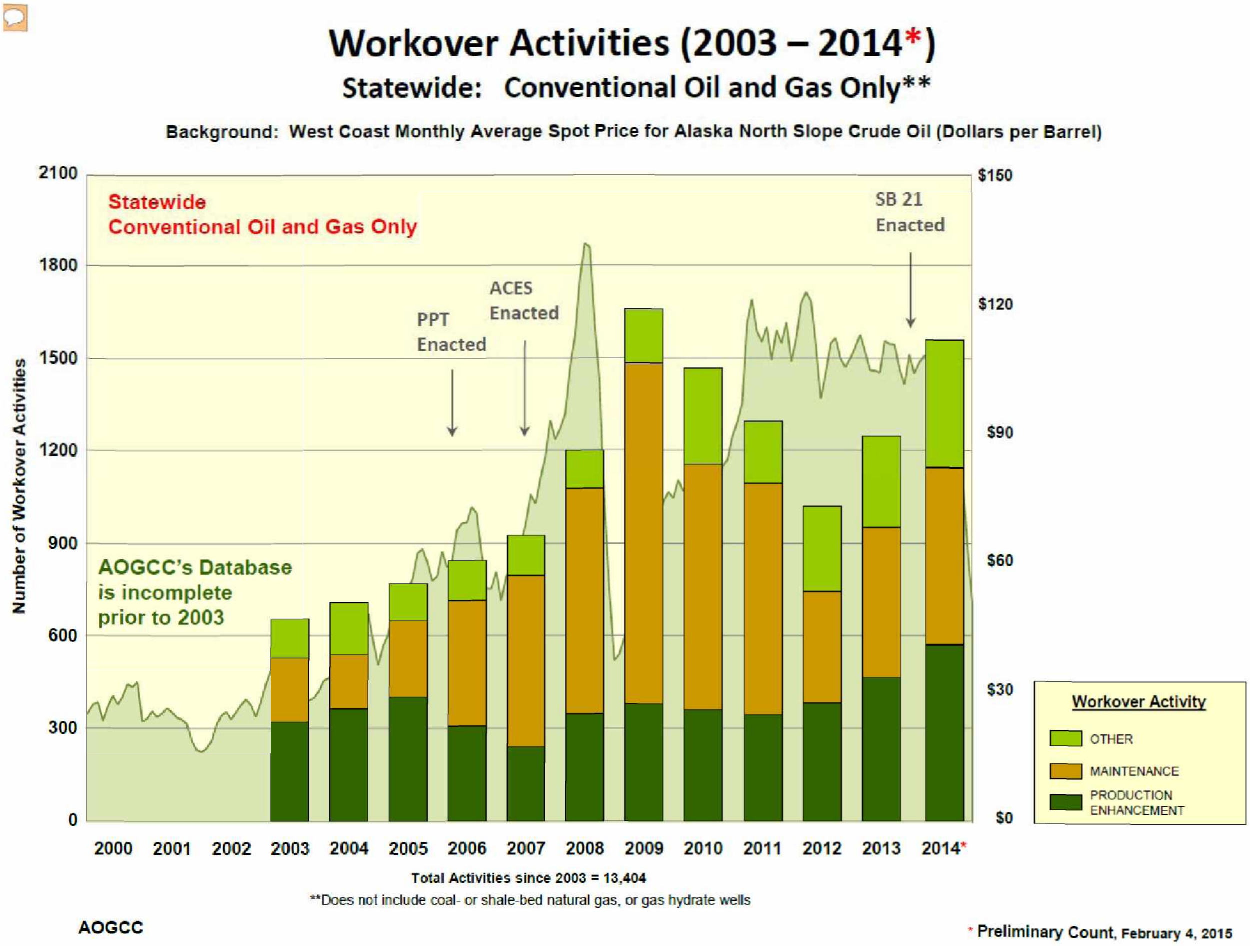
Tail-roll – Transportation method

Tundra travel season - Timeframe announced by the Alaska department of Natural Resources to travel in the tundra (ADNR, Tundra Travel Modeling Project)

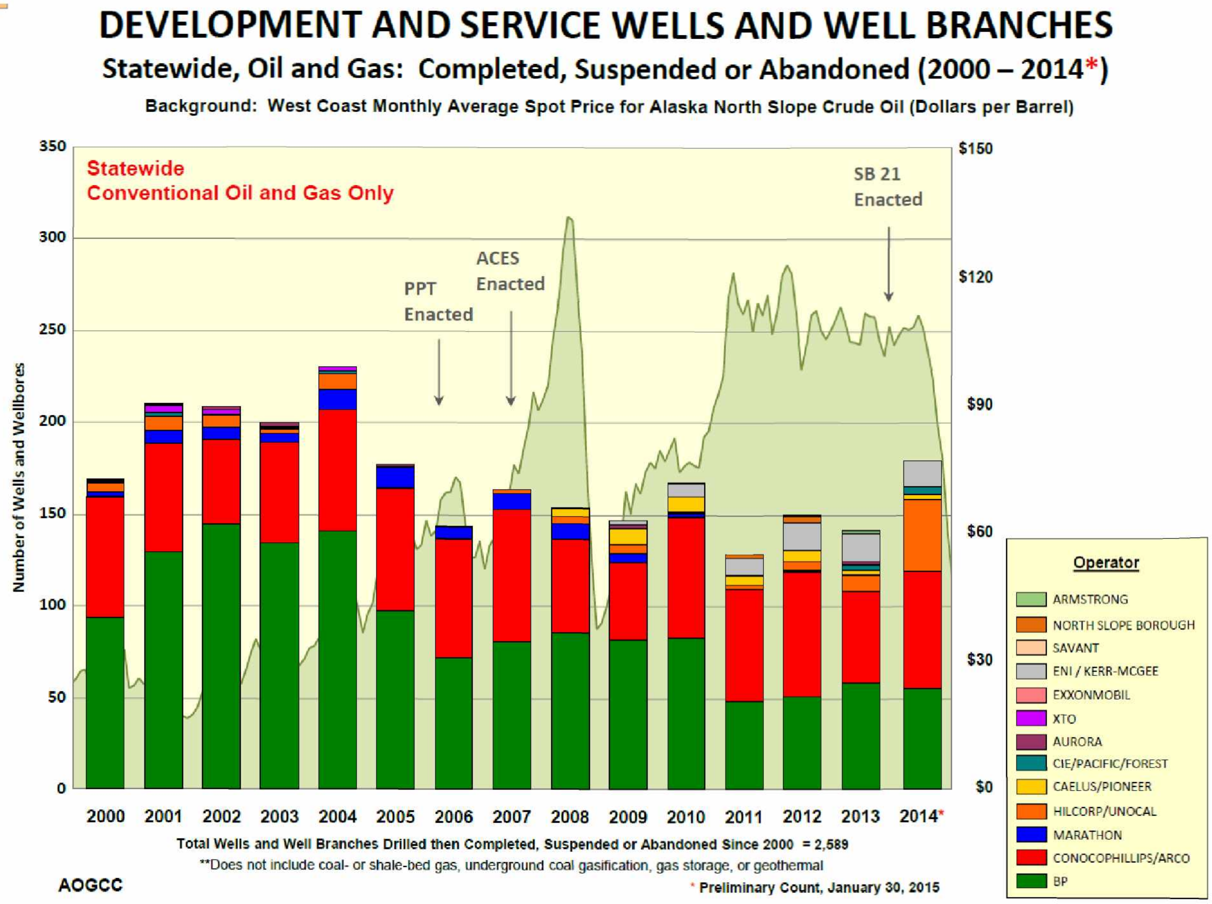
Appendixes

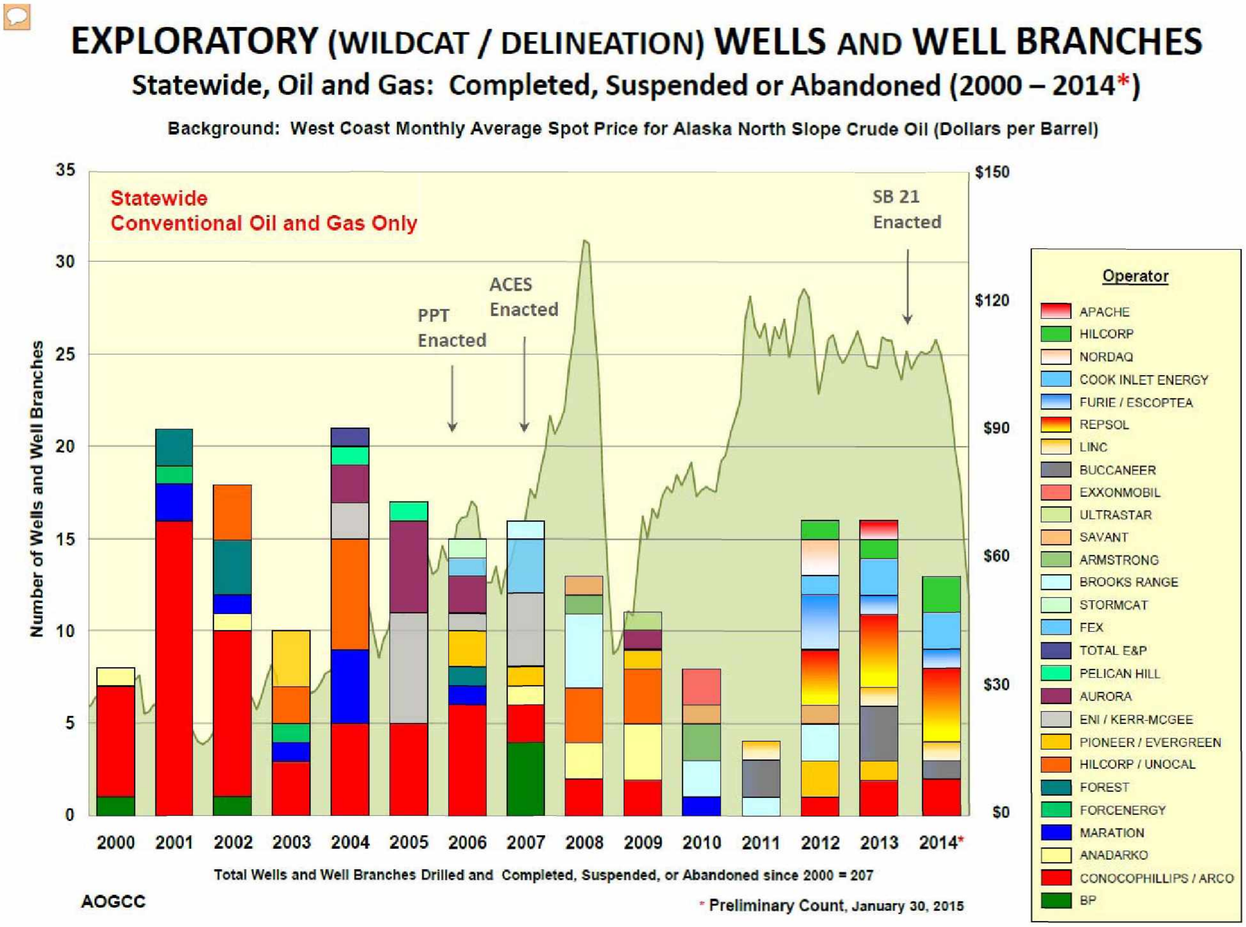
Appendix 1 - North Slope Oil and Gas Activity



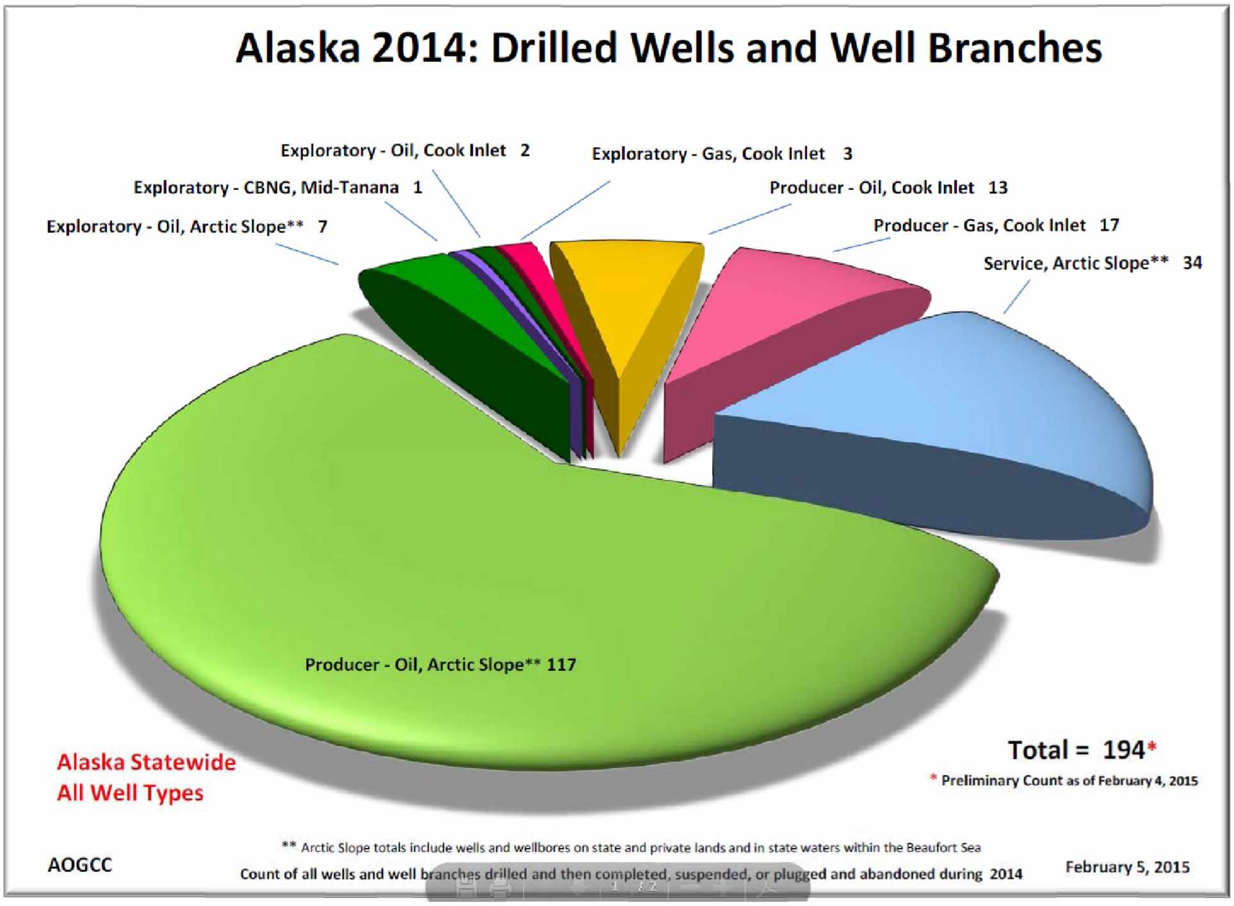


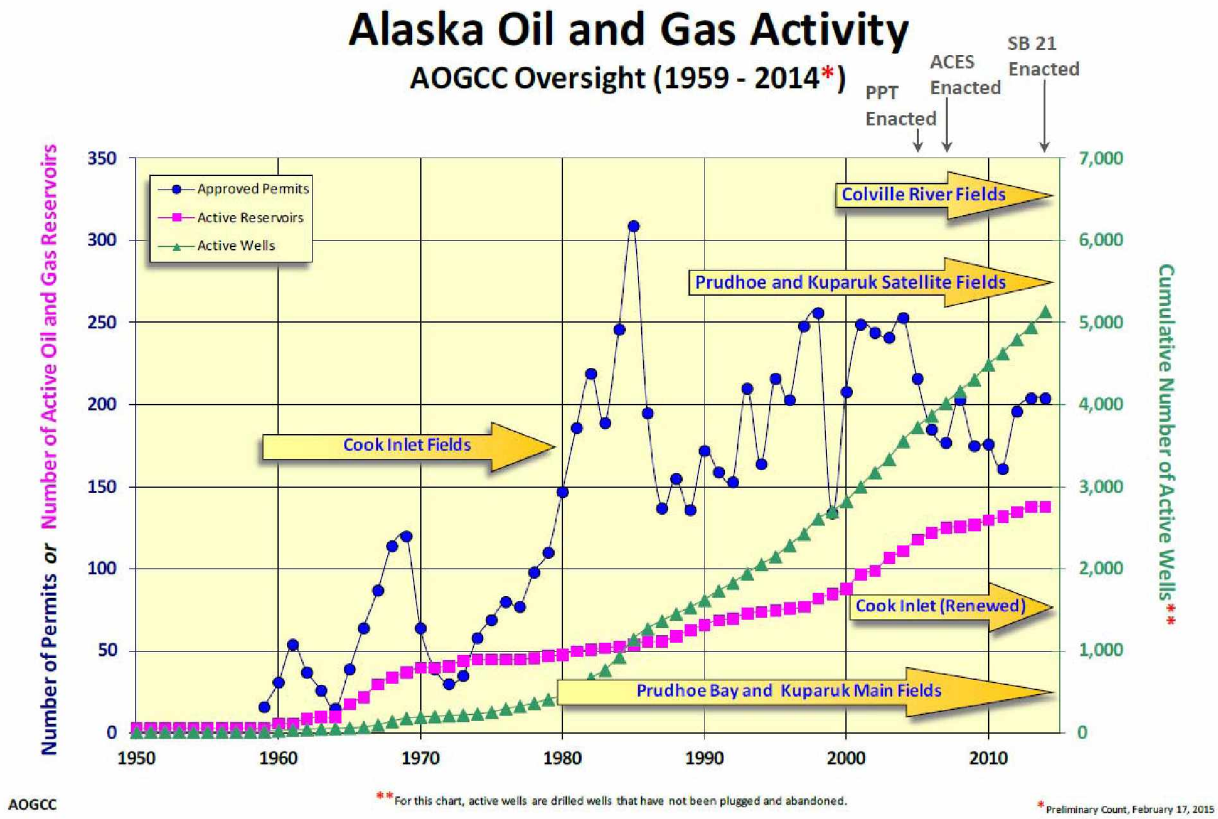
Workover Activities (2003 – 2014*)
Statewide: Conventional Oil and Gas Only**
Background: West Coast Monthly Average Spot Price for Alaska North Slope Crude Oil (Dollars per Barrel)
Statewide
Conventional Oil and Gas Only
SB 21
Enacted
ACES
Enacted
PPT
Enacted
AOGCC's Database
is incomplete
prior to 2003
Number of Workover Activities
2100
1800
1500
1200
900
600
300
0
$150
$120
$90
$60
$30
$0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014*
Workover Activity
OTHER
MAINTENANCE
PRODUCTION ENHANCEMENT
Total Activities since 2003 = 13,404
**Does not include coal- or shale-bed natural gas, or gas hydrate wells
AOGCC
* Preliminary Count, February 4, 2015


DEVELOPMENT AND SERVICE WELLS AND WELL BRANCHES
Statewide, Oil and Gas: Completed, Suspended or Abandoned (2000 – 2014*)
Background: West Coast Monthly Average Spot Price for Alaska North Slope Crude Oil (Dollars per Barrel)
Statewide
Conventional Oil and Gas Only
PPT Enacted
ACES Enacted
SB 21 Enacted
Number of Wells and Wellbores
350
300
250
200
150
100
50
0
$150
$120
$90
$60
$30
$0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014*
Total Wells and Well Branches Drilled then Completed, Suspended or Abandoned Since 2000 = 2,589
**Does not include coal- or shale-bed gas, underground coal gasification, gas storage, or geothermal
AOGCC
* Preliminary Count, January 30, 2015
Operator
ARMSTRONG
NORTH SLOPE BOROUGH
SAVANT
ENI / KERR-MCGEE
EXXONMOBIL
XTO
AURORA
CIE/PACIFIC/FOREST
CAELUS/PIONEER
HILCORP/UNOCAL
MARATHON
CONOCOPHILLIPS/ARCO
BP



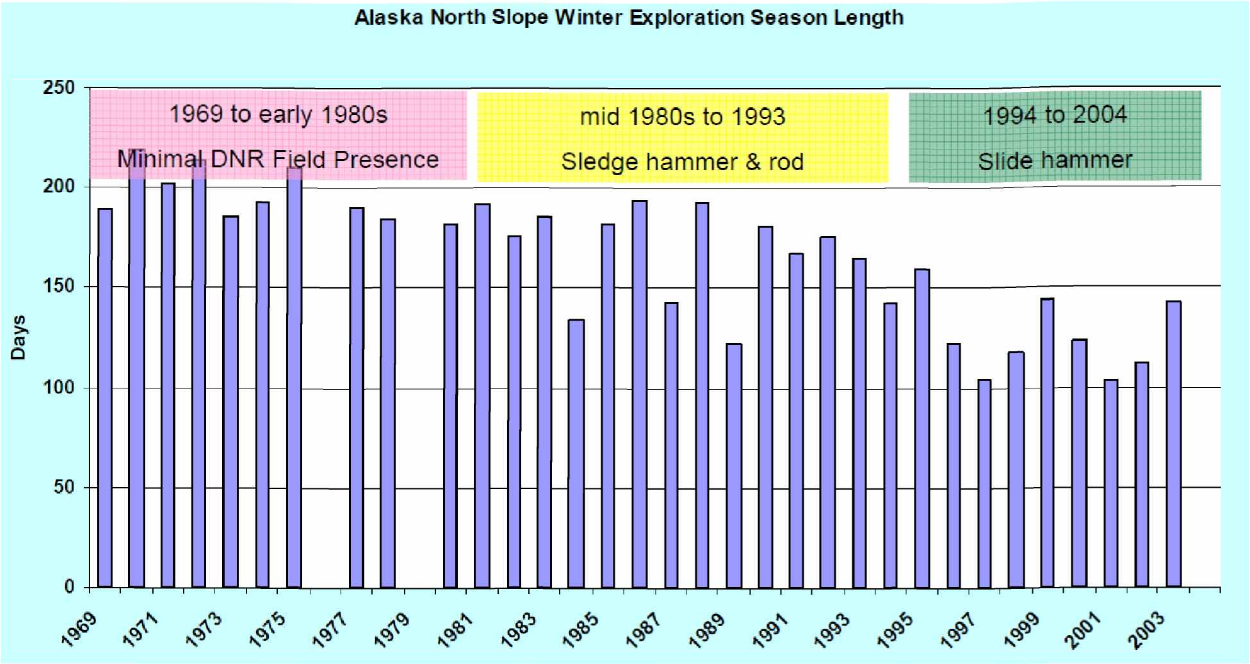
Project Management Department, University of Alaska, Anchorage.

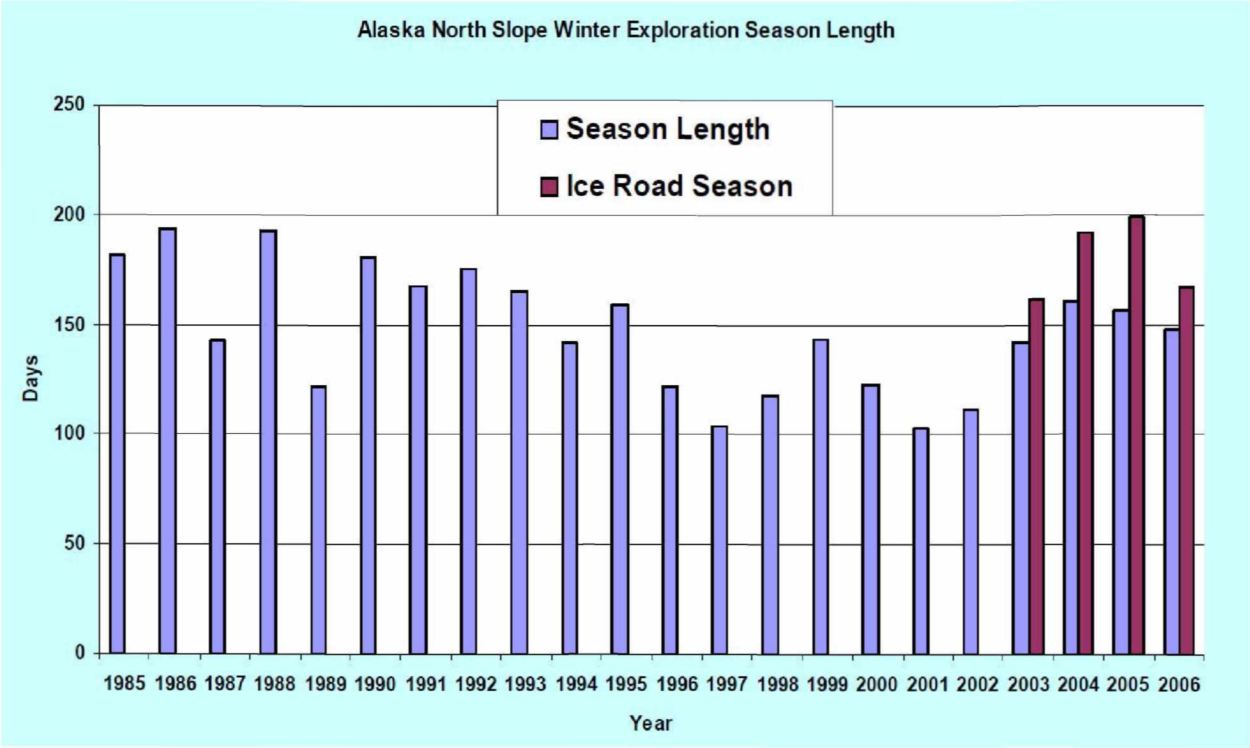

Alaska 2014: Drilled Wells and Well Branches
Exploratory - Oil, Cook Inlet 2
Exploratory - Gas, Cook Inlet 3
Exploratory - CBNG, Mid-Tanana 1
Producer - Oil, Cook Inlet 13
Exploratory - Oil, Arctic Slope** 7
Producer - Gas, Cook Inlet 17
Service, Arctic Slope** 34
Producer - Oil, Arctic Slope** 117
Total = 194*
* Preliminary Count as of February 4, 2015
Alaska Statewide
All Well Types
** Arctic Slope totals include wells and wellbores on state and private lands and in state waters within the Beaufort Sea
AOGCC
Count of all wells and well branches drilled and then completed, suspended, or plugged and abandoned during 2014
February 5, 2015


Alaska Oil and Gas Activity
AOGCC Oversight (1959 - 2014*)
PPT Enacted
ACES Enacted
SB 21 Enacted
Approved Permits
Active Reservoirs
Active Wells
Colville River Fields
Prudhoe and Kuparuk Satellite Fields
Cook Inlet Fields
Cook Inlet (Renewed)
Prudhoe Bay and Kuparuk Main Fields
Number of Permits or Number of Active Oil and Gas Reservoirs
Cumulative Number of Active Wells**
350
300
250
200
150
100
50
0
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1950
1960
1970
1980
1990
2000
2010
AOGCC
**For this chart, active wells are drilled wells that have not been plugged and abandoned.
*Preliminary Count, February 17, 2015

Appendix 2 - Tundra Data

Length of winter work Season from 1969-2003





Tundra Opening and Closing Dates for Tundra Travel

OPEN	CLOSE
13-Nov-69	21-May-70
20-Oct-70	27-May-71
1-Nov-71	20-May-72
1-Nov-72	4-Jun-73
15-Nov-73	20-May-74
18-Nov-74	30-May-75
1-Nov-75	28-May-76
Unknown-1976	29-May-77
25-Nov-77	3-Jun-78
4-Nov-78	8-May-79
Unknown-1979	20-May-80
7-Nov-80	9-May-81
11-Nov-81	22-May-82
4-Nov-82	29-Apr-83
15-Nov-83	18-May-84
5-Jan-85	20-May-85
4-Dec-85	4-Jun-86
7-Nov-86	20-May-87
13-Dec-87	3-May-88
16-Nov-88	29-May-89
11-Jan-90	14-May-90
19-Nov-90	19-May-91
27-Nov-91	12-May-92
21-Nov-92	17-May-93
6-Dec-93	20-May-94
8-Dec-94	29-Apr-95
4-Dec-95	10-May-96
6-Jan-97	9-May-97
7-Jan-98	21-Apr-98

Project Management Department, University of Alaska, Anchorage.

OPEN	CLOSE
14-Jan-99	12-May-99
20-Dec-99	11-May-00
10-Jan-01	14-May-01
25-Jan-02	8-May-02
20-Jan-03 - West Coastal	9-May-03 - Upper Foothills
20-Jan-03 - Lower Foothills	9-May-03 - Lower Foothills
27-Jan-03 - General Opening	19-May-03 - General Closure
23-Dec-03 - Eastern Coastal	5-May-04- Upper Foothills
9-Jan-04 - Western Coastal	13-May-04- General Closure
28-Jan-04 - L & U Foothills	

Appendix 3 - Survey Data

Survey Responder 1	Survey Responder 2	Survey Responder 3	Survey Responder 4	Survey Responder 5
Remote Location	Material availability	Changing priorities	Keeping projects on schedule on the slope	Weather
Cold Environment	Labor availability	High priority projects are worked concurrently	Short weather windows for certain activities	Labor
Limited Construction Season	Sim-ops issues	Productivity is less in the winter	High volume of work activities happening simultaneously and not integrated	Materials
Limited Equipment Resources	Weather	Permitting cycle times	Gaining alignment early in the project to allow proper planning and resourcing	Equipment
Limited Materials Availability	Operational issues	Funding cycle durations - partner approval required	Building and maintaining a team that can stay cohesive and focused	Scheduling
Limited Qualified Personnel		SIMOPS	Overly complex project delivery system that is "tweaked" constantly	High Risk work
Productivity		Brownfield work	Lack of experience with the organization's project delivery process.	HSE
Logistics				Acclimation (People)
				Sourcing Labor
				Wildlife

Survey Responder 6	Survey Responder 7	Survey Responder 8	Survey Responder 9	Survey Responder 10
Achieving funding approval in a timely manner	Competent Workforce	Schedule logic	Frequently, weather conditions are too severe to progress work. Schedules can get compressed.	Rig moves are unpredictable. When I worked in the field, unless a note said the rig was moving I typically ignored it.
Meeting POP times when wells require substantial surface facility modifications	Lack of Equipment	Resource assignments	Simultaneous Operations. Greater activity levels field-wide make plans more complex.	Communication around why there are changes to the schedule are not always well communicated.
Business interruptions due to Sim Ops	Cost	Lodging	Scope creep/change. Often it is difficult to obtain alignment with all the stakeholders	Some people believe the rig is always has priority due to the high cost of operations.
Efficient and timely rig moves	Native Corporations	Long Leads Materials	Limited skilled personnel to complete work. For example, welders are often a limitation.	
	Lodging		Communications; Cellular networks or satellite communication is costly and not always reliable.	
			Competition for other common resources.	

Survey Data Analisis			
Challenges	**Responses**	**Responders**	**%**
Simultaneous Operations	5	10	50
Weather	4	10	40
Resource Competition	4	10	40
Labor	4	10	40
Equipment	3	10	30
Schedule	3	10	30
Personnel skills	3	10	30
Material	3	10	30
Season	2	10	20
Funding cycle	2	10	20

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

FINAL PROJECT REPORT

University of Alaska Anchorage
Fall 2015

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

By

Alket Mici

RECOMMENDED: ______________________________
Walter Almon, Faculty Advisor, PM Program

____
Roger Hull, Instructor, PM Program

____
LuAnn Piccard, Chair of the ESPM Department,
PM Program Director, Assistant Professor
Chair, Advisory Committee

____
LuAnn Piccard, MS, PMP
Chair, Engineering, Science, and
Project Management Department

APPROVED: ______________________________
Kenrick Mock, Ph.D.
Associate Dean, College of Engineering

____
Date

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

A

PROJECT

Presented to the Faculty

of the University of Alaska Anchorage

In Partial Fulfillment of the Requirements

for the Degree of

MASTER OF SCIENCE

By

Alket Mici

Anchorage, Alaska

December 2015

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

Disclaimer

This paper is provided for information purposes only and does not provide extensive analysis of every material fact. The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented. The content is not influenced by, and does not represent the official position of the sponsoring organization and advisory committee. The project documents and this research paper contain certain non-attributable references to information, in order to protect the confidentiality of the sources. No names of companies or individuals were used, unless the information was publicly available. This report shall not be reproduced, distributed, or published by any recipient without the author's approval.

Project Management Department, University of Alaska, Anchorage.

Abstract

The recent increase in the number of the projects and activities on the North Slope of Alaska has become challenging, leading to numerous scheduling conflicts for equipment and resources. This project explains steps that can be taken to improve resource allocation and guidelines for scheduling oil drill rig work activities for oil and gas projects on Alaska's North Slope.

The project includes insights from two years of research to improve the oil drill rig scheduling process, a survey of subject matter experts involved in the oil drill rig scheduling process, research of similar Arctic environment projects, and the researchers professional experience identifying and mitigating risks and schedule conflicts in the mid-term planning phase of oil and gas projects.

Implementing the proposed guidelines has improved the oil drill rig scheduling process, roles and responsibilities are more clearly defined, communication among groups has been improved and support groups have adequate time to complete their work. Results include reduction of oil drill rig move downtime and a reduction in the time to produce oil after the oil drill rig leaves the well site.

Project Research Key Words

- Oil drill rig scheduling process
- Oil drill rigs / work-over rigs
- Oil drill rig schedule
- Oil drill rig scheduling tools
- Drill rig schedule optimization tools
- Oil drill rig schedule optimization
- Artic projects
- Remote projects
- North Slope project risks
- Challenges with North Slope projects
- Oil and gas remote projects

Project Management Department, University of Alaska, Anchorage.

Table of Contents

Page

List of Exhibits

List of Appendix

Page

Project Management Department, University of Alaska, Anchorage.

Introduction

The recent increase in the number of the projects and activities on the North Slope of Alaska has become challenging, leading to numerous scheduling conflicts for equipment and resources. This project explains steps that can be taken to improve resource allocation and guidelines for scheduling oil drill rig work activities for oil and gas projects on Alaska's North Slope.

The purpose of the study was to:

- Explain the steps required to improve the oil drill rig scheduling process
- Share professional experience with other groups and project managers
- Contribute to the body of knowledge of oil and gas projects and project management
- Demonstrate mastery of project management processes

The project includes insights from two years of research to improve the oil drill rig scheduling process, a survey of subject matter experts involved in the oil drill rig scheduling process, research of similar Arctic environment projects, and the researchers professional experience identifying and mitigating risks and schedule conflicts in the mid-term planning phase of oil and gas projects.

During research, surveys and interviews of key oil drill rig schedule stakeholders identified two main areas for improvement:

- Oil drill rig schedule process workflow
- Oil drill rig scheduling tool

A project team, with members from all groups involved in the oil drill rig scheduling process was assigned to meet once every two weeks until the deliverables were met.

First, the existing process was documented in a workflow diagram. After analyzing the existing process, came up with three different improved processes for each activity class: drilling, work-over and coil tubing drilling (CTD) (see glossary definitions for oil drill rig classification). Then identified the project gates and developed a checklist with the minimum criteria to:

- Enter an activity in the schedule
- Break-in or progress a well in the 90 day gate
- Break-in or progress a well in the 28 day gate

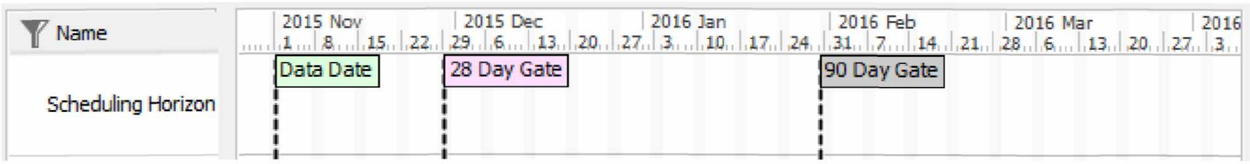


Exhibit 1: Schedule Horizon

Source: (North Slope Alaska, Oil and Gas Company)

Exhibit 1 shows the scheduling horizon for a typical oil and gas producer in Alaska's North Slope. Scheduling horizons are defined as long-range, mid-rage and short-range:

Long-range planning horizon: Greater than two years from the execution date
Mid-range planning horizon: 90 days to 2 years from the execution date
Short-range planning horizon: 90 days from the execution date

In addition, a break-in process was created to manage schedule changes within the 28 and 90 day horizon for drilling, work-over and coil tubing drilling processes.

Second, the project manager identified a new oil drill rig scheduling optimization tool used by one of the business units. After evaluating the tool and working with the software developer to meet stakeholder needs, the new oil drill rig scheduling tool was implemented.

Finally, the oil drill rig schedule meeting was improved which shifted the emphasis of the meeting from a working session to a reporting forum. As a result, the changes to the schedule and the break-in approval process are conducted prior to the meeting.

Implementing the proposed guidelines has improved the oil drill rig scheduling process, roles and responsibilities are more clearly defined, communication among groups has been improved and support groups have adequate time to complete their work. Results include reduction of oil drill rig move downtime and a reduction in the time to produce oil after the oil drill rig leaves the well site.

Project Research Approach

The project includes insights from two years of research to improve the oil drill rig scheduling process, a survey of subject matter experts involved in the oil drill rig scheduling process, research of similar Arctic environment projects, and the researchers professional experience identifying and mitigating risks and schedule conflicts in the mid-term planning phase of oil and gas projects.

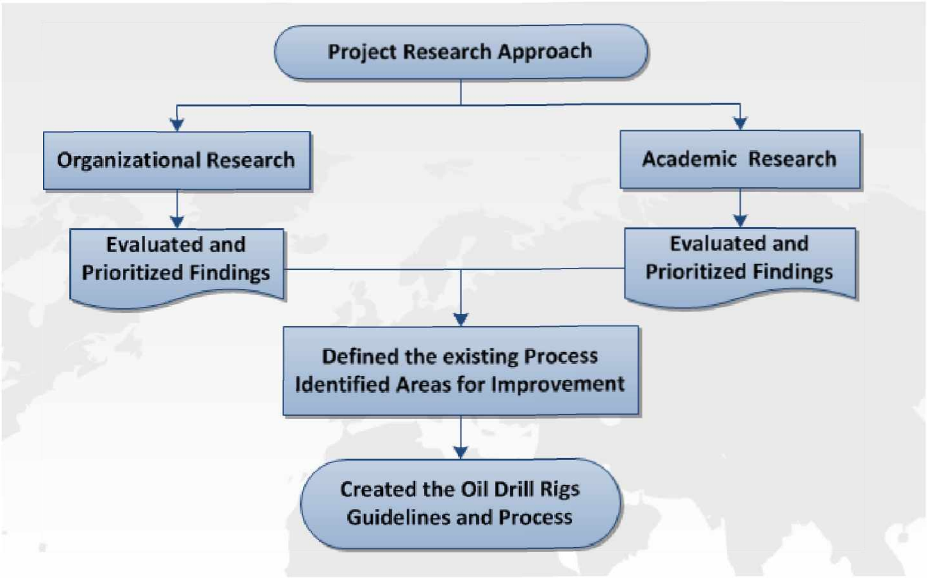


Exhibit 2: Project research approach

Exhibit 2 shows the graphical representation of the project research approach. The results of the academic and organizational research were evaluated and prioritized. The findings were compared in order to find the scheduling conflicts, challenges, differences and similarities.

Organizational Research

Prior to starting the project, the project manager attended a workshop to better organize and facilitate meetings, identifying tools and techniques for collaboration. This workshop identified tools and techniques that were the most appropriate and efficient for capturing the current process work flow, issues, conflicts, and areas for improvement.

Exhibit 3: Organizational research process

Exhibit 3 shows the graphical representation of the organizational research approach. The project manager performed the organizational research focused in four different groups and organizations: The project owners, Alaska's North Slope partners, field organizational survey and company's wide survey. One of research objectives was identifying any rig scheduling processes or guidelines already implemented. The other objective was to create a rig scheduling process and guideline and compare to other groups processes.

The project manager drafted the project management plan and deliverables, identified stakeholder requirements, and obtained approvals in order to improve the process workflow. The project manager submitted the project deliverables to the core team members, advisors and subject matter experts for review and feedback. The project progress was presented to the team members and advisors once every two weeks until the deliverables were produced and accepted.

Project Owners Research

First, the project manager identified the key stakeholders, their representatives and their involvement in the oil drill rig scheduling process. After that, a drill rig scheduling gap analysis was conducted in the form of a workshop involving representatives from the Reservoir Development, Drilling, Wells, Exploration and Operations.

One of the objectives of the workshop was to identify stakeholder requirements, their needs, and how they measure success in order to improve the oil drill rig scheduling process. The project manager created the first draft of a stakeholder register and traceability matrix and presented it at the next team member meeting to get stakeholders' agreement.

The other objective was to map out the existing oil drill rig schedule process and identify areas for improvement. The Brain-writing approach (see glossary) was used to map the existing process using sticky notes. The notes were then transferred to a work process mapping tool for better visualization.

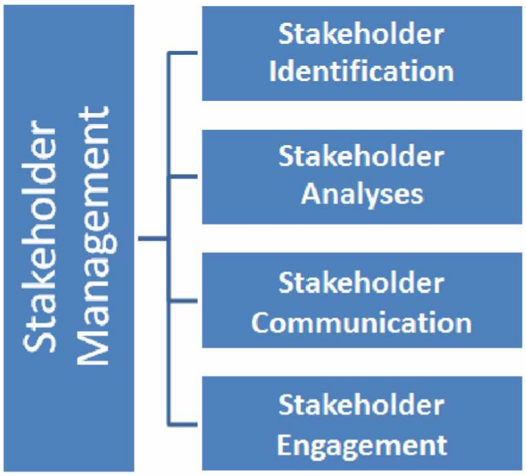


Exhibit 4: Stakeholder Management

Source: Stakeholder Management umbrella (Auraujo)

Exhibit 4 shows the stakeholder management approach, which is one of the most important elements to successfully complete this project. It is important that stakeholders be engaged in the process to gain their buy-in and they can have significant influence on decision makers in the groups they represent. The stakeholder analysis was conducted to determine which groups needed to be involved and who would best represent and influence their group.

Breakdown of stakeholder management approach:

Stakeholder Identification

- Internal stakeholders
- External stakeholder

Stakeholder Analysis

- Requirement traceability matrix
- Stakeholder register

Stakeholder Communication

- Scheduled meetings
- Distribute meeting notes
- Report progress

Stakeholder Engagement

- Required meeting participation
- Required feedback

During research, surveys, interviews of key oil drill rig schedule stakeholders, and the "Fishbone" diagram approach (see glossary) used in the workshop, two main areas for improvement were identified:

- Oil drill rig schedule process workflow
- Oil drill rig scheduling tool

The next step was assigning the team members that would determine how to resolve the previously identified issues, develop and document an improved oil drill rig scheduling process. The project team members, representing their groups were scheduled to attend bi-weekly meetings to come up with the oil drill rig scheduling guidelines document.

Organizational Survey Research

Another important step in developing the guidelines was getting feedback from the end users that are or will be affected from the oil drill rig scheduling process. The field user's feedback and improvement ideas were then taken to the project team meetings for further discussion.

Oil Drill Rig Scheduling Process Workflow

The project team, with member from all groups involved in the oil drill rig scheduling process was defined and scheduled to meet once every two weeks until the deliverables were met.

First, documented the old process in a process workflow tool and started analyzing the areas improvement identified in the workshop using the Fishbone diagram.

Top five identified areas for improvement:

- Simultaneous-operations
- Project funding
- Schedule break-in
- Schedule communication
- Oil drill rig moves

Top five identified oil drill rig schedule constraints:

- Oil drill rigs and oil drill rig move resources
- Remote location
- Weather
- Season
- Road conditions

The findings from the old process showed a single workflow for drilling, work-overs and coil tubing drilling. The project team analyzed the findings and developed an improved processes one for each activity class; drilling work-over and coil tubing drilling.

Simultaneous Operations

Simultaneous-operations are defined as multiple work activities by the same group or different groups in the same area at the same time. The simultaneous operations enable schedule optimization by executing work concurrently in order to shorten project delivery time. A quality communication management plan and risk analysis is necessary, as well as, the project owner's buy-in to ensure simultaneous-operations benefits are manifested.

Usually simultaneous operations term is confused with scheduling conflicts. However, if the project owners do not agree with the simultaneous operations scenarios, then we have scheduling conflicts that need to be resolved. These scheduling conflicts need to be identified in the early planning phase; otherwise, the consequences might be significant.

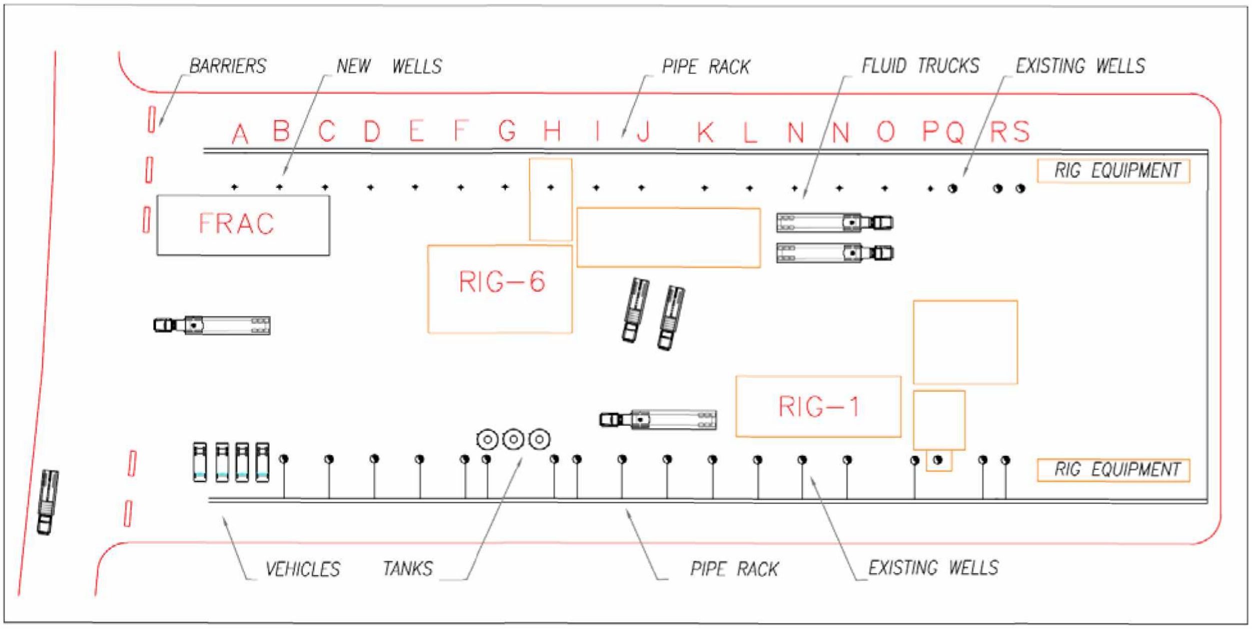


Exhibit 5: General layout scenario of a typical North Slope Drill-site.

Exhibit 5 shows a general layout scenario involving simultaneous-operation on the North Slope Alaska drill-site. In this scenario, two oil drill rigs are scheduled to operate in a very tight area. Usually, the oil drill rigs come with several loads of supporting material that are staged on the drill-sites. Additionally, hydraulic fracturing activity is scheduled at the same time. Due to the high number of rig work activities on the drill-site, the construction crews cannot access the well to complete the tie-in to the production or injection pipeline. There are numerous activities and moving parts that need to be coordinated and communicated on a daily basis in order to identify and mitigate risks and to ensure continued progress by all groups.

According to an Arctic Energy article released from two of the major North Slope oil & gas operators in July, 2006 "New technology reduces impact". (BP & COP, 2006)

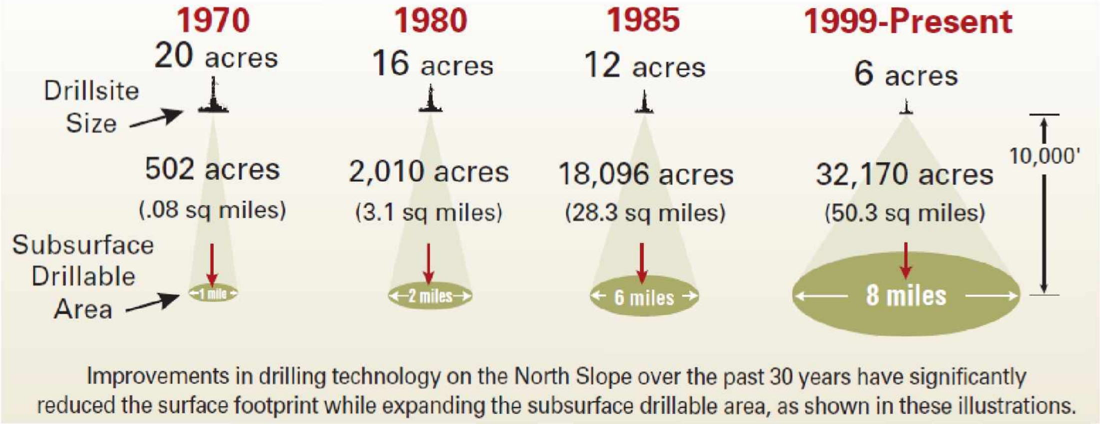


Exhibit 6: Decreasing surface footprint, expanding subsurface contact

Source: Arctic Energy article released from two of the major North Slope oil & gas operators

The article explains how smart technology reduces the environmental impact. "Drilling advances and improved waste management techniques enable the producers to significantly reduce the land area needed for oil field development. Wells that once were spaced about 120 feet apart are now drilled as close as 10 feet." (BP & COP, 2006). Exhibit 6 illustrates the decrease in the drill-site size from 20 acres to six acres in last five decades. This has resulted in tight well spacing which has increased the simultaneous-operations and HSE (Health Safety and Environments) risks. Occasionally, the activities cannot be safely executed simultaneously which increases the time required to place wells into production.

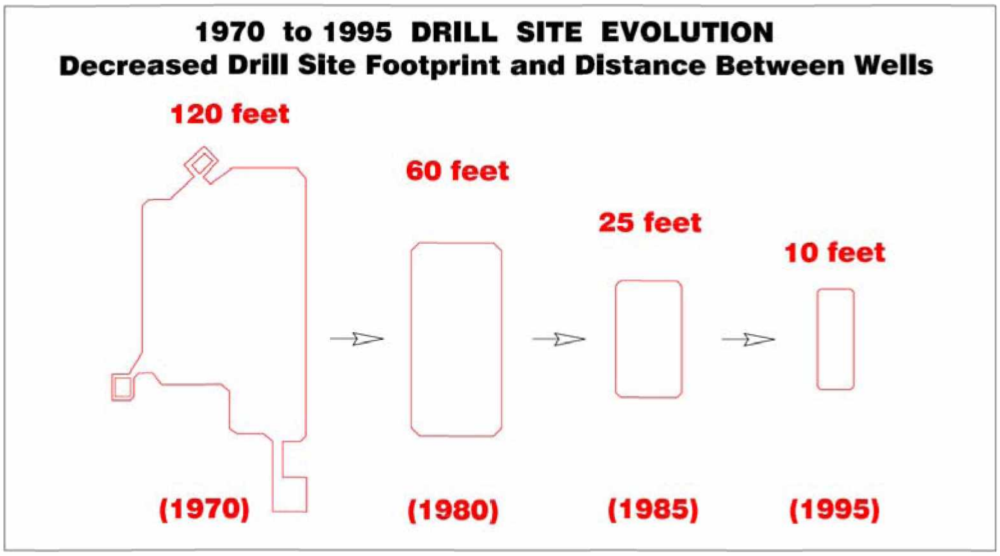


Exhibit 7: North Slope Alaska drill-site

Source: (API, 2008)

Exhibit 7 demonstrates how the shrinking of the drill-sites areas effects on decreasing the distance between wells. (API, 2008)

Schedule Sequencing

Schedule sequencing is another import step in the oil drill rig scheduling process that compliments simultaneous operations. In the past, the wells were entered in the schedule based on the predicted oil rate and other factors including their reservoir location, the direction of drilling due to geological formation and other downhole criteria. Since drilling operations cost significantly more than other projects, simultaneous-operations with other projects were not part of the oil drill rig scheduling optimization. It was typically assumed that all other activities would be scheduled after the oil drill rig work was completed.

After drilling or repairing the wells, the construction and the post drilling activities take place. That includes the well-work and the construction activities connecting the wells to the drill-site pipeline so that the oil can be transported to the facilities. A typical drill-site in the Alaska's North Slope was chosen to run scenarios and identify is scheduling work activities simultaneously could be safely accomplished to shorten the project delivery time.

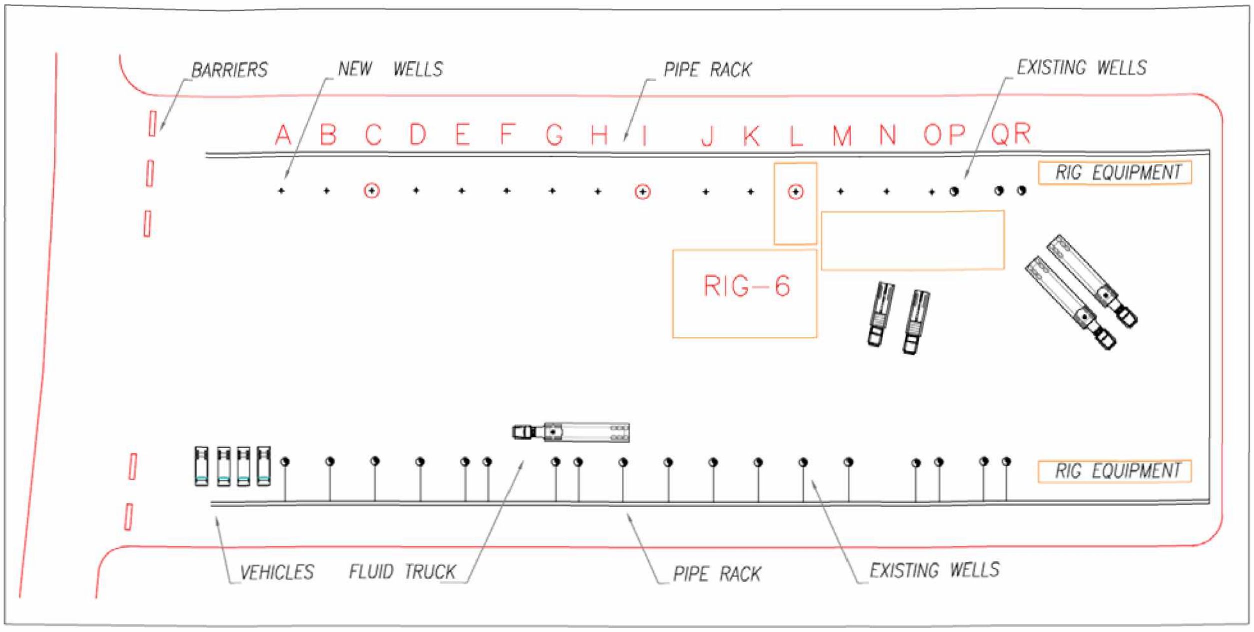


Exhibit 8: Typical Alaska's North Slope Drill-site

Exhibit 8 shows the layout drawing of the drill-site, the location of the existing and new wells, drilling oil drill rig and other drilling operation support. In this scenario the oil drill rig number 6 is drilling well "L". The next well candidates to be drilled are wells "I" and "C". Both well candidates are estimated to produce an equal amount of BOPD (barrels of oil per day).

Project Management Department, University of Alaska, Anchorage.

Scenario No 1

Exhibit 9 shows the scenario number 1 of a typical drill-site on the Alaska's North Slope. In this scenario the oil drill rig number 6, previously was drilling well "L" moved to well "I". Reviewing the site drawing, it is clear that the drilling oil drill rig blocks the previous drilled well. As a result, the well-work equipment can't access to the well to complete the post oil drill rigs well-work operations. Nor can the construction activities take place. The production for wells "L" cannot take place until completing the post oil drill rig well-work and construction work to connect the well on the pipeline.

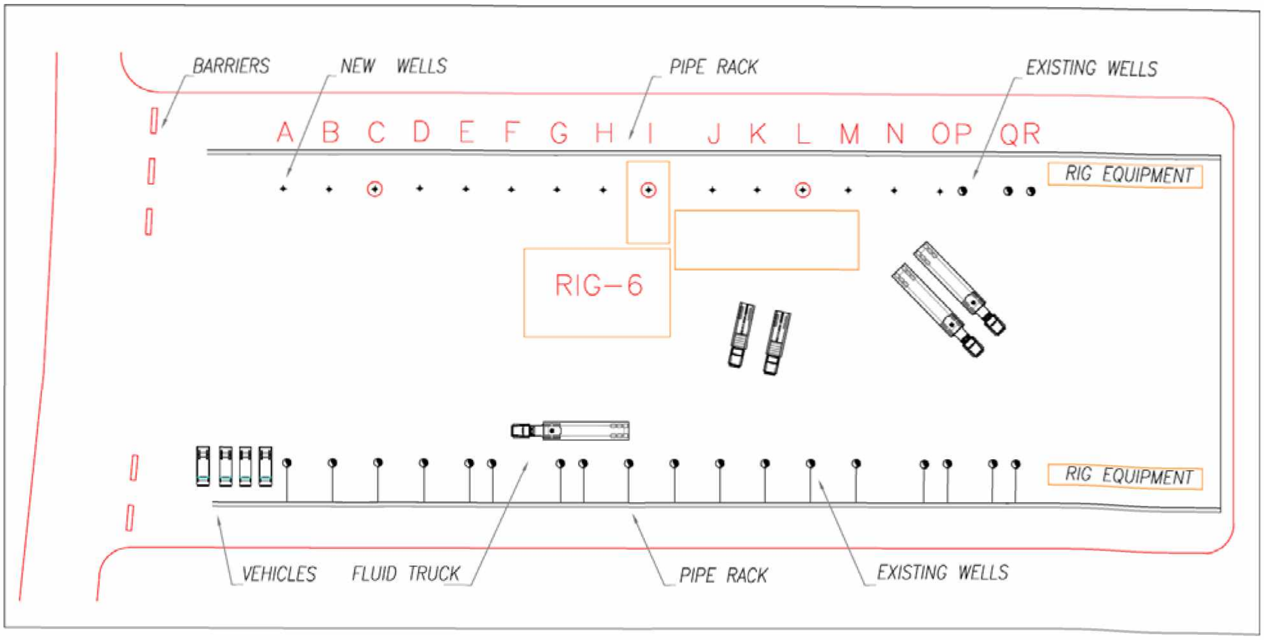


Exhibit 9: Typical Alaska's North Slope Drill-site – Scenario No 1

Due to the drilling oil drill rig covering well "L" while drilling "I" the production will be delayed at the same amount of time that the oil drill rig will be sitting on well "I".

Scenario No 2

Exhibit 10 shows the scenario number 2 of a typical drill-site on the Alaska's North Slope. In this scenario, the oil drill rig number 6 previously drilling well "L" moved to well "C" rather than well "I". Looking at the site drawing, it is clear that the drilling oil drill rig does not cover the previous drilled well "L". As a result there is enough room for the well-work equipment to access to the well "L" to complete the post oil drill rig well-work. Concurrently, the construction activities of connecting the well to the production pipe can take place as soon as the well-work is complete. As a result, the time it takes to produce oil after the drilling oil drill rig moves from the well is decreased.

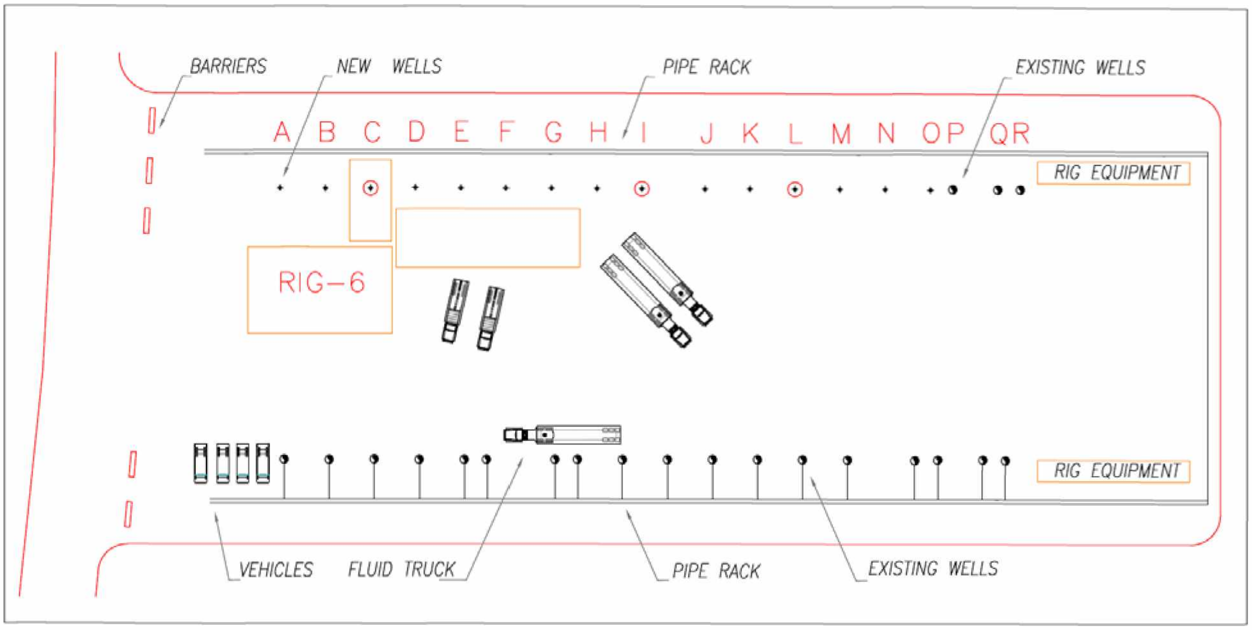


Exhibit 10: Typical Alaska's North Slope Drill-site – Scenario No 2

Based on this exercise, the scenario number 2 would work better than scenario number 1 due to placing the wells into production sooner. Using this approach on a large development project significantly accelerates the volume of oil the project will deliver in the current budget year.

One of the goals of Alaska's North Slope operators is to maintain the oil production rates. (AOGCC, Alaska's Average Daily Oil and NGL Production Rate, 2015). So, the new drilled wells must connect to the pipeline and flow the oil to the facilities as soon as possible. Sequencing activities on the drill-site is an important step in the process. It helps the project owners identify and mitigate scheduling conflicts so they can get wells on production faster. Once the well locations are identified and the wells are entered in the oil drill rig schedule, positioning the drilling oil drill rig on the drill-site and sequencing activities takes place. These events usually take place in the early phase of the mid-term planning horizon.

Project Funding

Project funding was another area identified for improvement. Typically, projects had not received funding and had to be rescheduled within days of their planned execution. These changes to the schedule caused numerous scheduling conflicts; not only in the oil drill rig schedule, but with other construction support groups as well.
Having the project funding before the jobs enters the 90 day gate provides enough time for the facilities to schedule and prepare the well for the drilling or work-over drill rigs.

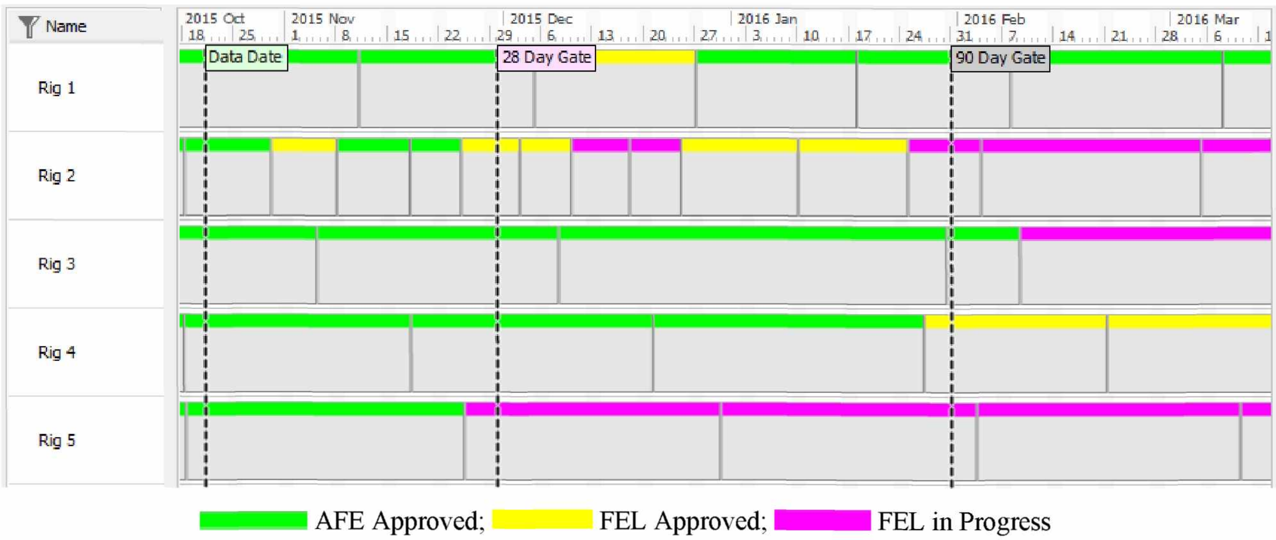


Exhibit 11: Project Funding Tracking and optimization

Exhibit 11 shows the oil drill rig schedule with funding cycle for the well-work activities. In a perfect scenario all the jobs within the 90 day gate must have fully sanctioned funding. In this schedule scenario, there are many jobs shown as “FEL in progress” or “FEL approved” (see glossary for the definitions of AFE and FEL) and many of these jobs will have to be rescheduled.

Oil Drill Rig Scheduling Process Gates

Other identified scheduling improvements were the project gates and checkpoints. Since the old process wasn't documented, many jobs were added to the schedule at any planning horizon. Many of them were not ready to be scheduled and were in conflict with other projects scheduled at the same time at the same drill-site. Exhibit 12 shows the gates and schedule horizons.

First defined the project gates: Long-range planning, Mid-range planning and Short-range planning Horizons.

- Long-range planning horizon: Greater than two years from the execution date
- Mid-range planning horizon: 90 days to 2 years from the execution date
- Short-range planning horizon: 90 days from the execution date

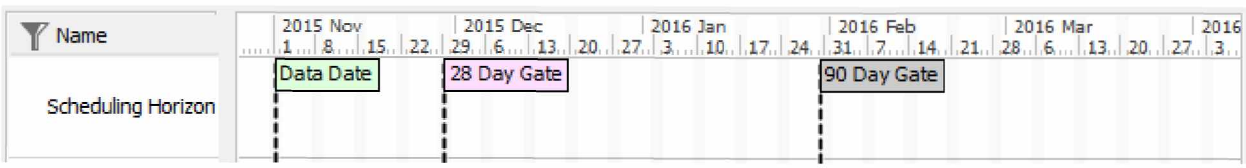


Exhibit 12: Oil drill rig schedule Horizon, Gates and Checkpoints

Then, defined the project gates and developed a checklist with the minimum requirements needed to enter or progress an activity in the schedule:

- Enter an activity in the schedule
- Break-in or progress a well in the 90 day gate
- Break-in or progress a well in the 28 day gate

In addition to drilling, work-over, and coil tubing drilling processes; a break-in process was created to manage schedule changes within the 28 and 90 day horizon.

- **Entry gate – Minimum criteria to enter a well in the schedule:**
    - Is the tentative start date and duration defined?
    - Does the oil drill rig fit on the drill-site/or well?
    - Are there any simultaneous-operations?
    - Has the EFL process started?
    - Does it compete with other jobs?
    - Are there any long-lead items

- **90 day gate - Minimum criteria to progress or break-in a job in the schedule:**
  - Does the project have funding?
  - Is the design ready?
  - Are the materials ordered and availability confirmed?
  - Are the permits identified?
  - Are there any simultaneous-operations or conflicts with other groups and projects?
  - Are the 90 day break-ins approved by the management?

- **28 day gate - Minimum criteria to progress or break-in a job in the schedule:**
  - Are the permits in place?
  - Does the project is fully funded?
  - Are there any simultaneous-operations or are the conflicts with other groups or projects solved?
  - Are the 28 day break-ins approved by the Management?
  - Are there any pre-oil drill rig work identified issues?

Since implementing the new oil drill rig scheduling process, the scheduling conflicts have not only been minimized, but eliminated. All schedule break-ins are reviewed, analyzed, and approved by management. Only "very low impact" break-ins that add value are approved. All schedule break-ins are documented and reported to management. In 2015, less than 15 activities broke-in to the 90 day gate and the five activities broke-in into the 28 day gate. There are no any proposed break-ins rejected by the management to date.

Schedule Communication

Another key area for improvement was the schedule communication and integration. Historically, different tools had been used to schedule projects and work activities. Some projects were scheduled in Primavera, other projects were scheduled in Microsoft Project, and other projects were scheduled in Microsoft Excel. These schedules were not integrated which caused numerous scheduling conflicts which led to low productivity and project cost overruns.

In order to identify scheduling conflicts in the early planning phase, all the project schedules were integrated in a single database. This enabled the project managers to visually identify scheduling conflicts and optimize the schedule for multiple work programs. As a result, many scheduling conflicts were identified and removed while optimizing the oil drill rig schedule which saved the company significant expense.

Oil Drill Rig Moves

In order to identify oil drill rig move improvements, the project manager conducted research with the onshore oil drill rigs operating on Alaska's North Slope. Based on research and personal observation, the project manager determined that the drilling and work-over rigs on Alaska's North Slope are very diverse. Some of them are built specifically for pad drilling applications, large development projects, exploration projects and others for maintenance or well repair applications. It is important to better understand the oil drill rig specifications, layout on the drill-site and the method of moving the unit.

Oil Drill Rig Classifications

- Rotary oil drill rigs
    - Rotary oil drill rigs are large machines used for drilling activities and install underground utilities in order to connect the oil reservoir with surface infrastructures.
- Coil tubing oil drill rigs
    - Coil tubing oil drill rigs are large machines used to drill and complete a well using single coil pipe. The coil tubing is directed by the injector head to the well.

- Work-Overs rigs (well repair)

  According to the research, the work-over rigs are diverse and usually have a smaller layouts, smaller capacity and sometimes weigh less compared to oil drill rigs. They are mainly used to repair the existing wells and restore them back to production or injection. A drilling oil drill rig can serve as a work-over rig if needed and many large work-over rigs can conduct drilling activities. Selection is dependent on the type of the job, capability of the oil drill rig, availability, and economic constraints.

Oil Drill Rigs Moving System

- Oil drill rigs traveling on wheels.
    - Self-propelled
        - These types of oil drill rigs use their own engines and moving system to travel from one location to another. On these types of oil drill rigs, the modules are stacked together on a moving trailer creating a massive structure housing the equipment needed to drill the wells.

  - Pulled by trucks
    - These types of oil drill rigs or units are pulled by specialized trucks to move from one location to another. Same as the self-propelled oil drill rigs, the modules are stacked together on a moving trailer creating a massive structure housing the equipment needed to drill the wells.

- Oil drill rigs traveling on "tracks"
  - Using the tracking system to travel from one location to another. They are usually large in size and designed for large pad development projects. Despite the size and the weight, these oil drill rigs are easy to drive from one location to another

- Oil drill rigs mounted on "skids"
  - Drilling oil drill rig modules are broken down into smaller components mounted on skids for easy transportation. They can be "tail-rolled" by regular bed trucks in order to travel in the road systems. These types of oil drill rigs have a larger footprint on the drill-site and designed mostly for exploration projects. Also, they are designed to be transported by helicopters if the climate changes and are useful in Artic environment operations.

- Oil drill rigs traveling on "walking system"

  - These types of oil drill rigs are designed to use the walking system to travel. They are designed for large pad development projects one same drill-site; however, they need to be broken down to smaller components to travel from one location to another.

As previously described in Exhibit 5 simultaneous operations and sequencing activities on the drill-site are important steps in the process of scheduling the oil drill rigs. Having specialized resources on the team, that understand the oil drill rig operations, rig specifications such as moving speed and the traveling ground pressure, layout on the drill-site, moving system, pays enormous dividends in identifying scheduling conflicts in the early planning phases.

Internal Company Wide Research

Another important step was reaching out and exchanging experience with other business units in order to compare the oil drill rig schedule process. Identifying how their oil drill rig scheduling process works and the values for meeting their business goals.

During research, it was identified that an oil drill rig optimization tool was used by one of the business units. After evaluating the capabilities and benefits of the software, it was agreed by the oil drill rig schedule owners to implement the tool in their business unit. Prior to adopting the new oil drill rig scheduling tool, the researcher attended one of the tool's user conferences with participants from major oil and gas operators in the United States and the world. Testimonies from these users and their feedback were important in determining the value of the tool.

One of the user's testimonies was regarding optimizing the schedule of the water used for hydraulic fracturing. Another user was optimizing the schedule to meet lease deadlines. Both cases show the importance and the benefits of the optimization tool they were using in order to succeed. Even though the companies attending the conference were using the tool for different optimization purposes, the developers were able to adopt the tool in order to meet the user's needs.

Oil Drill Rig Schedule Optimization Tool

The following section includes screen captures to demonstrate the possible optimization exercises that can be run in an oil drill rig scheduling tool.

Oil Drill Rig Move Optimization

This section shows the schedule optimizing based on the oil drill rig move distance. The oil drill rig schedule optimization tool can be programmed to optimize for the shortest travel time; saving both time and money required to move from one drill-site location to another.

Exhibit 13 shows the oil drill rig schedule with travel distance. In this scenario, the schedule is optimized by allocating the drilling activities grouped to the same drill-site. Oil drill rig move costs are saved by drilling on the same drill-site. The oil drill rigs move more often from one drill-site to another; however, this scenario is showing numerous oil drill rig moves at the same drill-site.

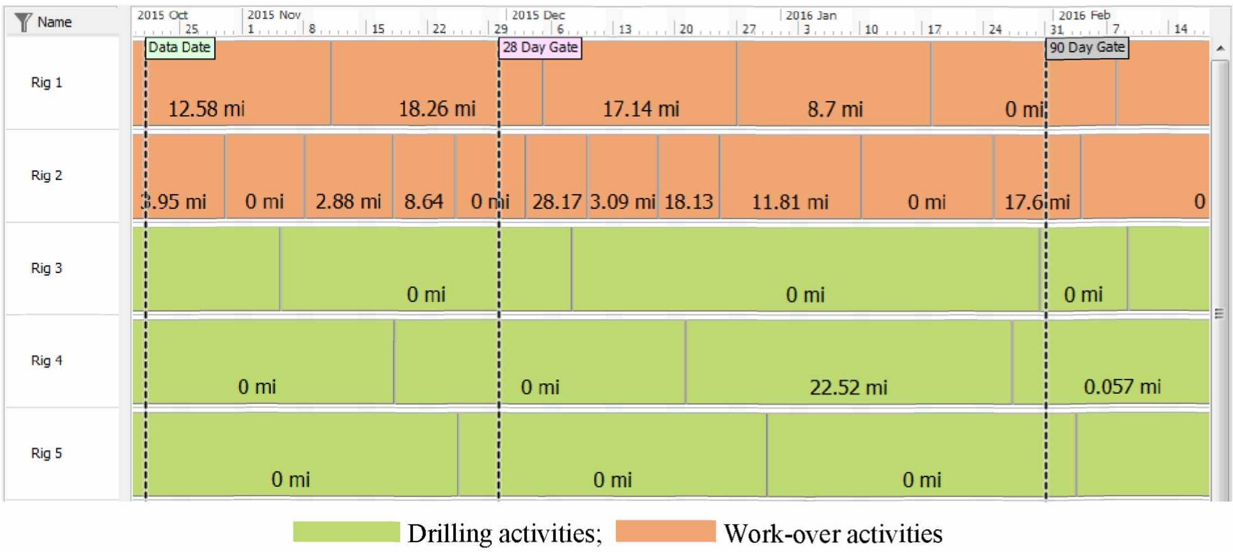


Exhibit 13: Oil Drill Rig Schedule Travel Distance

Simultaneous-Operations Optimization

This section shows a scenario of monitoring scheduled activities on the drill-sites, in order to identify and mitigate oil drill rig schedule conflicts. On scheduling tools it is challenging to visualize and find out how many activities are scheduled at the same drill-site at the same time versus optimization tools which can be programmed to show multiple views. The "site view" is preferred because it shows scheduling conflicts and simultaneous-operation at the same drill site location.

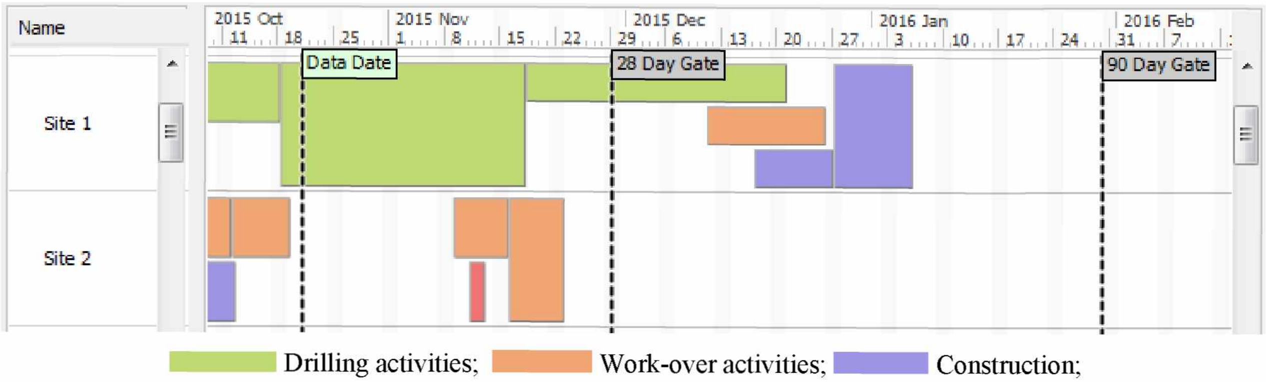


Exhibit 14: Site schedule simultaneous operations

Exhibit 14 shows a site schedule and the activities occurring on individual drill-sites at the same time. In this scenario, site 1 shows simultaneous-operations between the drilling rig, work-over rigs and construction crews. Site 2 shows simultaneous-operations between work-over rigs, construction crews and well-work shown in red. Once the simultaneous-operations are identified, the drill-site layout drawing will be reviewed in order to make sure that there are no conflicts. If there are any conflicts, high priority activities are scheduled to take place first. Based on actual data, 60% of the oil drill rig schedule benefits are captured due to identifying schedule conflicts of activities being at the same site at the same time. The savings are valued and plotted to reporting tools for management review and approval.

Road Conditions Optimization

Due to the roads being unstable in the summer, it is best to avoid oil drill rig moves to certain drill-sites. The oil drill rig scheduling tool can be programmed to flag these events. Also, if the wells are drilled in the winter and there is no road access, the tool can be programmed to flag these events as well.

Exhibit 15 shows the oil drill rig schedule with restricted summer oil drill rig move flags. Oil drill rig 1 and oil drill rig 2 have activities associated with summer oil drill rig move. Once these events are identified, the owners decide to optimize the schedule and avoid oil drill rig moves in the restricted areas or prepare the roads to handle the oil drill rig moves. The decision is made based on the ground pressure of the drilling units and the weather conditions.

Exhibit 15: Restricted oil drill rig move

20% of the oil drill rig schedule benefits are captured as of result of identifying oil drill rig moves in restricted areas. The benefits are valued and plotted to reporting tools for management review and approval.

Production Optimization

This section shows the schedule optimization for the wells with the highest production rate to drill or repair first in order to bring them in production. According to the State of Alaska oil production rate charts from 1960 to 2010, the oil production is declining. The owners are challenged to maintain the field production to keep the Trans-Alaska Pipeline System (TAPS) open. As a result, new drilling technology has been implemented and new fields are being drilled. Moreover, the work-over activities are increased to repair broken wells and maintain production.

Alaska North Slope Operators Research

Since the environmental and geographical area has a significant effect on the scheduling process, it was advised to reach out and consult with other Alaska's North Slope operators and partners. No specific information about the oil drill rig scheduling process was identified during this research. (2014-2015 Winter Drilling Program Lease Plan of Operations Approval, Exploration Phase)

The research found that one of the oil and gas producers uses a scheduling tool to schedule the project lifecycle for wells. The schedule includes important steps such as the project study, environmental, engineering, permitting, logistics, ice road & ice pad construction, and drilling the wells. Two other oil and gas producers were focused specifically on the execution part of the schedule, drilling wells and wells maintenance.

Academic Research

Two main areas of the academic research were the web and survey research. The web research was focused in rig oil drill rig papers, articles and regulatory agency articles and documents. The survey research was focused on information provided by the subject matter experts, project managers, contractors and representatives of oil and gas operators in the Alaska's North Slope.

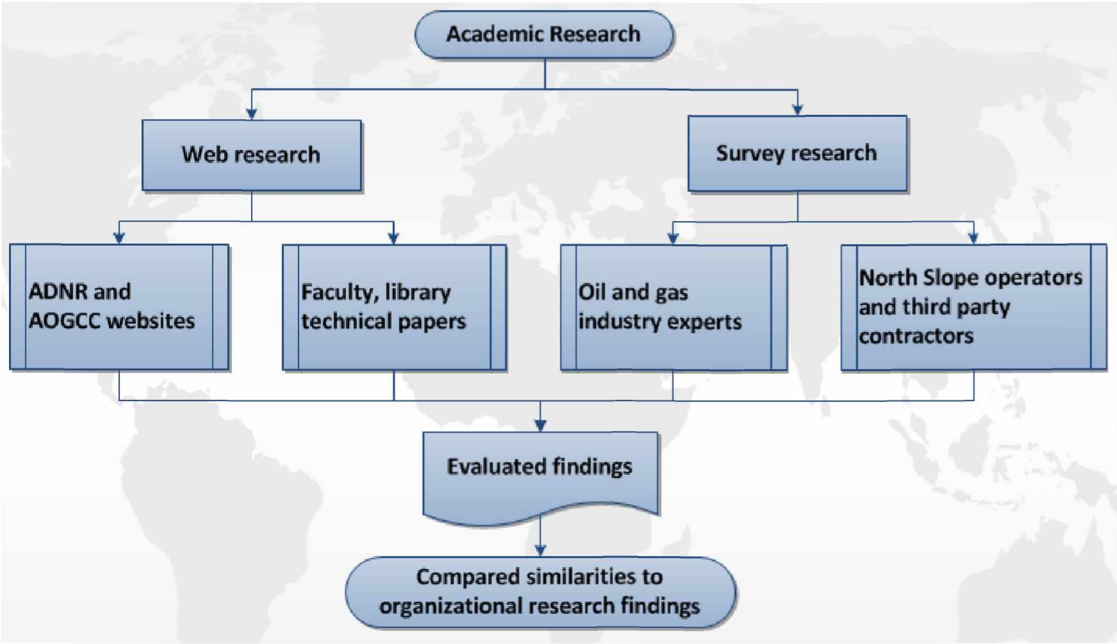


Exhibit 16: Academic research

Exhibit 16 shows the graphical representation of the academic research approach. The results of the academic research were evaluated and prioritized. The academic research findings were compared to the oil drill rig organizational research finding. As of result, scheduling challenges, differences and similarities were identified.

Web Research

This research was focused on research papers about oil drill rig scheduling process. Minimal information regarding the oil drill rig schedule process in Alaska's North Slope exists. However, there were a couple of articles regarding the oil drill rig schedule optimization. One of the articles complemented the oil drill rig optimization tool findings listed in the organization research section.

The project manager conducted research on papers and articles for oil drill rig scheduling in an Arctic environment, searched local and federal agency requirements for planning and executing projects in Alaska's North Slope, and developed a recommended oil drill rig scheduling process based on researchers experience in remote projects working for different organizations and operators new to the Arctic.

North Slope Alaska, Land Drilling & Work-Over Oil Drill Rigs

Alaska is well known as remote area and road access are limited. Drilling activities can take place in the remote areas and are usually not accessible all year. As a result, specialized equipment and trained personnel are needed to transport the oil drill rigs from one drill-site to another.

According to the oil and gas activity charts for the active drilling and work-over rigs (AOGCC, Work-Over Activities, 2015) in past 10 years, there is an increase of oil drill rig work activities in last few years. Since the fields are getting older and the production is declining, the project owners are challenged to maintain the production steady.

- **New drill-sites development.** In 2015, one of the producers operating in the Alaska's North Slope drilled the first wells and is producing oil from two new drill-sites. Also, they are progressing with construction of a third drill-site. Same operator announced in fourth quarter 2015 the approval for developing an additional new drill-site.

- **Increase of coil tubing development wells.** The coil tubing oil drill rigs have improved during last few years drilling as many as eight branches per well. (BP & COP, 2006)

- **Repair and service the wells that declined or stopped production.** Since the field is getting older there is an increase in the number of work-overs wells. (AOGCC, Work-Over Activities, 2015)

The demand for work-over rigs is high, since supporting the coil tubing drilling programs with coil tubing drilling set-ups. Due to the decreasing drill-sites surfaces, a large number of wells are drilled on 15', 12.5' or even 10' spacing. (API, 2008). As a result, many of the old work-over rigs are not suitable for these applications. They might be able to enter in small spacing; however the offsetting well's shelter must be removed. As a result, the wells might need to be secured from freezing in the winter months and more wells will be shut-in. This process is costly and the owners prefer to contract or even build work-over rigs that work in tight well spacing in order to avoid shutting-in wells.

One of the major operators in the North Slope contracted two new work-over rigs in the last few years. Another operator is using oil drill rigs to serve as work-over to achieve the business goals and achieve production targets. However, the consequences of using these units for work-over applications are higher costs and longer move time during the summer.

Drilling Contractors and Qualified Labor Force

The labor force for the oil drill rigs is manageable for long terms contract oil drill rigs. The personnel are hired, trained, and embedded with experienced personnel until they meet company requirements. The hiring process for the new built rigs is managed by allocating experienced labor to help with the startup phase and train the new hires.
The hiring process for the exploration projects is slightly different. The exploration projects, mostly take place during the ice road season and since the exploration season is very short, the contractors struggle to find qualified labor on time. This doesn't affect the oil drill rig scheduling process; however it can delay the startup of development or exploration projects and can result in lower productivity.

Oil Drill Rig Move Resources

The oil drill rigs in the North Slope Alaska are diverse. They are built from different fabricators and have different move system types. Most common, are the oil drill rigs that are pulled with costume made moving trucks. As a result, specialized companies and equipment are used to move the oil drill rigs from one location to another. Limited resources are capable of moving the oil drill rigs in Alaska's North Slope.

During the start of the ice road season, the moving companies are focused on transporting the oil drill rigs and equipment on to the ice. At the end of the ice road season, the moving companies are focused on transporting the oil drill rigs and equipment off of the ice. As a result, many of the work-over and development oil drill rigs must wait for equipment or labor to become available.

Remote Location / Accessibility

The Arctic Energy article shows how the use of ice roads and ice pads significantly reduces harm to the tundra. Since the exploration season is limited to a short window, ice roads are built to support the exploration drilling programs. Instead of constructing gravel pads for exploration drilling, temporary pads of ice are constructed. These ice pads disappear in summer leaving no damage to the sensitive tundra. (BP & COP, 2006)

A number of drill-sites are built for multiple seasonal exploration or development campaigns. Many drill-sites are accessible by ice roads or barge only. Others are accessed by ice roads and barge.

Exhibit 17: Typical multi seasonal remote location on Alaska's North Slope.

Source: Pt Thompson Project Images, 2010

Exhibit 17 shows the central pad of the Pt Thomson project in 2010. The equipment mobilization and demobilization including drilling support fluids and fuel were transported during the ice road and barge seasons. Some of the equipment including a drilling tent was transported by helicopter.

According to a study conducted by the Alaska Department of Natural Resources, tundra operation season is getting shorter compared to previous decades. Since the exploration window is getting shorter, the owners are only able to drill and evaluate one or two wells per season. (ADNR). That can be very costly and it is very difficult to justify decisions on an economic basis.

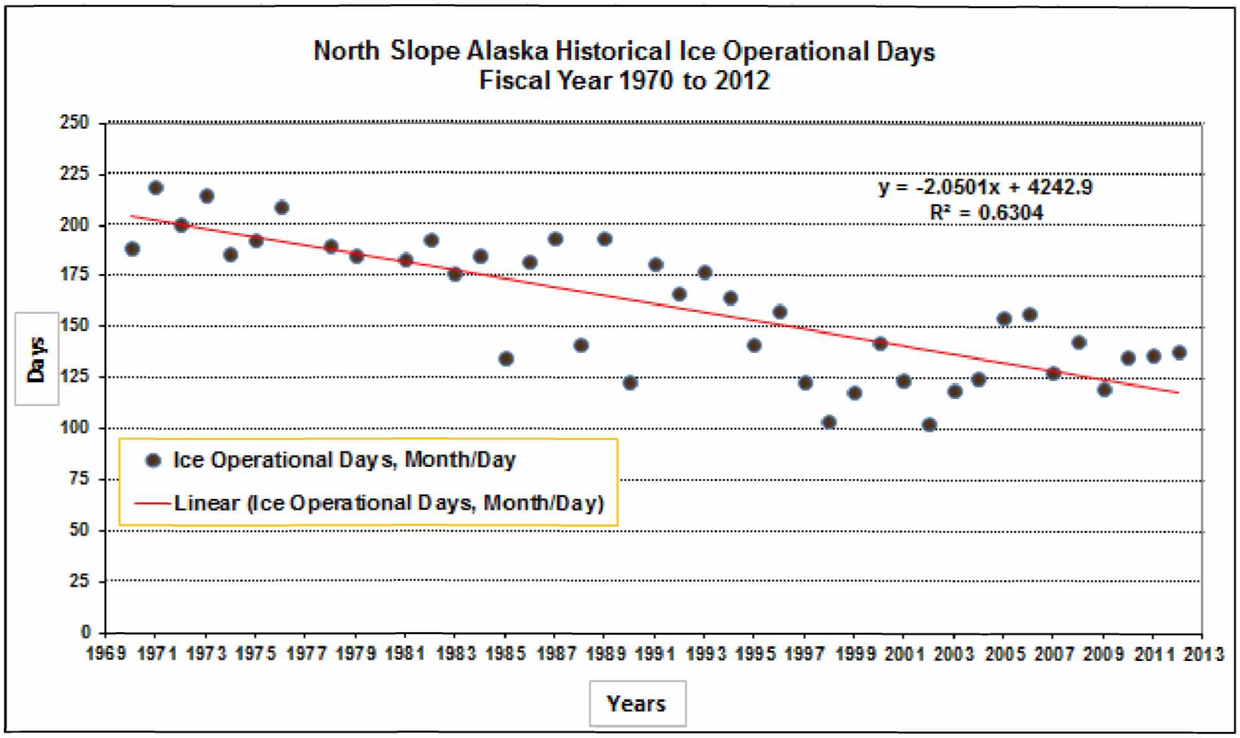


Exhibit 18: Length of the winter tundra travel season 1970 to 2012

Source: DNR - Division of Lands researchers' observation

Tundra open and closed dates were plotted on Exhibit 18. The chart shows the decrease of tundra operational season. According to the data analysis, the average tundra travel duration is:

- From 1970 to 1979 - 199 days
- From 1980 to 1989 – 176 days
- From 1990 to 1999 – 145 days
- From 2000 to 2009 – 133 days
- From 2000 to 2013 – 137 day

Season

According to the Arctic Energy article released from two oil & gas operators in July, 2006, the base material of the North Slope road system is gravel. In the winter, the road sections are frozen and it is easier for the oil drill rigs to move from one location to another. In summer, during heavy raining season, the roads have lower structural ratings and fail which causes travel time delays. Many roads perform better than others. The roads with the worst performance record are flagged in order to avoid summer delays. The oil drill rig schedule uses these flags to minimize moves across weak roads.

Exhibit 19 shows the ice conditions and thickness of lakes, rivers and the ocean, the timeframe for offshore drilling and ice roads and the breakup seasons of the lakes, rivers and the ocean. (BP & COP, 2006). The drilling programs starts in late January to early February and completes by the end of April.

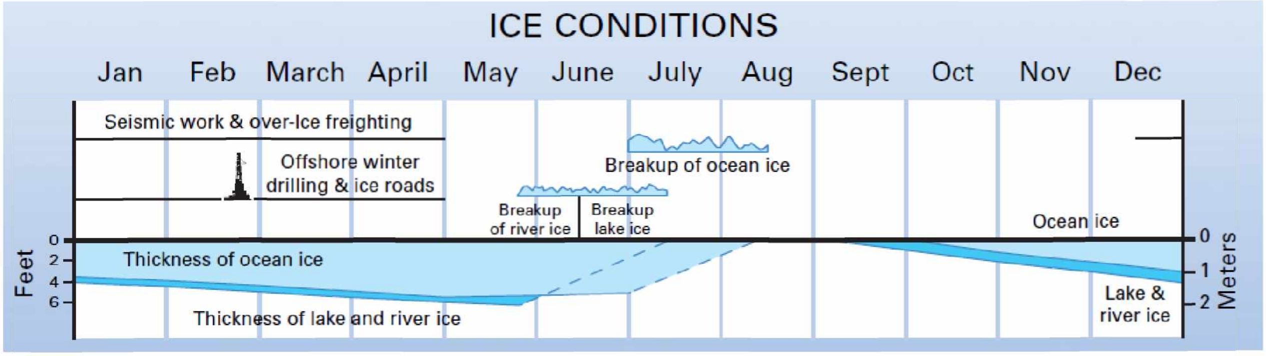


Exhibit 19: Ice conditions

Source: Arctic Energy article released from two oil & gas operators in July, 2006

Weather

According to the Arctic Energy article for 56 days in midwinter, the sun never rises above the horizon on the North Slope. But in the summer, the arctic coast enjoys 75 days when the sun never sets. (BP & COP, 2006). Exhibit 20 shows the daylight charts. In the Alaska's North Slope, the oil drill rigs operate 24 hours per day and the daylight/darkness condition will not affect the drill rig work activities or the drill rig moves.

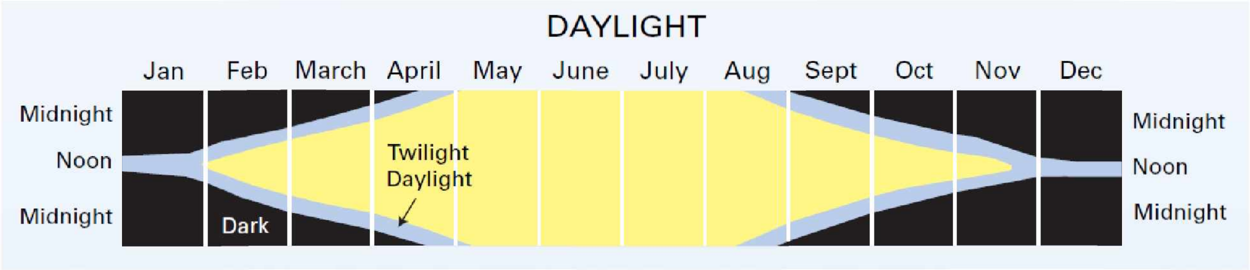


Exhibit 20: North Slope Alaska Daylight

Source: Arctic Energy article released from two oil & gas operators in July, 2016

According to the Arctic Energy article, winter air temperatures are as low as minus 68 degrees Fahrenheit and high winds can drive the chill factor to minus 115 degrees Fahrenheit. In summer, temperatures can occasionally increase to 80 degrees Fahrenheit. However, it can snow any day of the year along the Arctic coast. (BP & COP, 2006)Although winter snowfall is generally less than 3-1/2 feet, snowdrifts can be more than 20 feet high causing construction project delays.

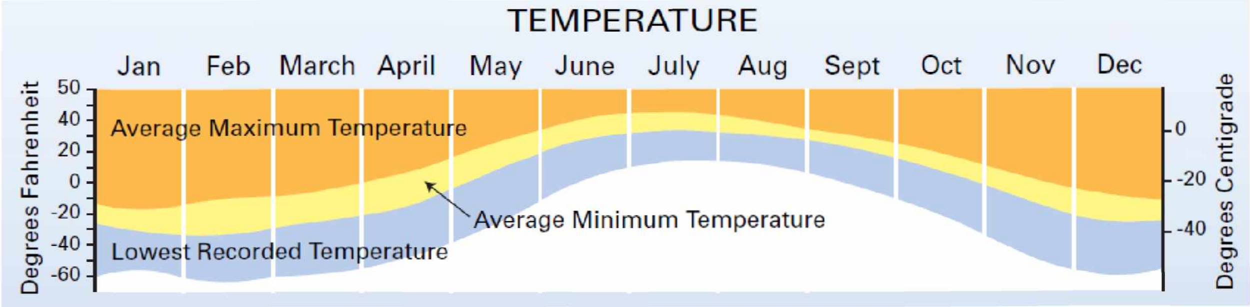


Exhibit 21: North Slope Alaska Temperature

Source: Arctic Energy article released from two oil & gas operators in July, 2016

Even though the weather is one of the most important factors and has significant affect in scheduling work activities in the Alaska's Slope North, it holds less priority in the oil drill rig scheduling process. The oil drill rigs are fully winterized and the weather will not significantly affect drilling operation unless moving from one location to another or waiting for drilling fluids delivery. During oil drill rig moves, rig up and rig down, weather days contingency is added to these activities.

Oil Drill Rig Schedule Optimization

Though the drill rig scheduling is an important function in oil and gas industry, minimal literature exists for oil drill rig scheduling processes. Most of the articles found regarding the oil drill rig scheduling reference the process of scheduling wells rather than oil drill rigs.

One of the most interesting findings during research was the theses article regarding the oil drill rig schedule optimization from Salem Hamoud Al Ghrabi, October 2011. According to his study, there were different forms of drilling rig schedule optimization:

- "Optimizing time: The author explains the need to have a drilling oil drill rig schedule such as to make sure that all the wells are drilled in the shortest time. This schedule includes oil drill rig speed, distance between wells, and the drilling operation time. The optimization ensures the operation is completed in the shortest time, and can help release oil drill rigs ahead of time to save cost." (Grabi, Salem Hamoud Al, 2011)
- "Optimizing production: The author explains how to get the maximum production rate, and/or improve the production rate in the shortest time. This is focused on the well production rate. This optimization strategy helps increasing the production in case of emergency need." (Grabi, Salem Hamoud Al, 2011)
- "Optimizing drilling oil drill rigs: The author explains the need to drill the wells with a minimum number of drilling oil drill rigs. This optimization is based on shortage of drilling oil drill rigs. (Grabi, Salem Hamoud Al, 2011)
- "Optimizing oil drill rig move: The author explains how to produce rig schedule with the minimum drill rig movement. This is focused on the distance between wells, and the current oil drill rig location." (Grabi, Salem Hamoud Al, 2011). In this exercise the author ran multiple scenarios optimizing the oil drill rig moves base on well coordinates. This is an innovative optimization concept if traveling off roads, however in the North Slope Alaska the oil drill rigs move from one location to another are using road system.
- "Optimizing cost: The author explains hot generating the drilling rig schedule with the most effective cost". (Grabi, Salem Hamoud Al, 2011)
- "Specific optimization: The author explains other specific reason schedule optimizations, such as optimizing for a specific fluid type, or specific group of wells." (Grabi, Salem Hamoud Al, 2011)

Survey Research

In order to identify challenges, risks and constraints that project managers encounter while scheduling work activities; a survey was sent to subject matter experts, project managers, contractor and representatives of a North Slope operator. The survey results were used to identify and prioritize their most significant challenges.

Survey analysis

This survey was conducted to investigate the challenges that the project manager encounter while scheduling work activities in the Alaska's North Slope. The purpose of the survey was to find mutual scheduling challenges and the existing oil drill rig schedule process effects on other projects.

A survey template was sent to 23 oil and gas professionals, project managers, engineers and schedulers experienced with North Slope Arctic environment projects. It was agreed that the survey was conducted for academic study for the University of Alaska Anchorage and neither individual's names nor their company names would be exposed. The individuals were chosen among different companies, contractors and major oil and gas operators in the North Slope Alaska.

The first surveys were sent out in February, 2014 and all their responses were collected by April, 2014. About 43% responded to the survey and ranked their top five to ten challenges, major risks and constraints. 80% of the responders provided general answers. 20% of the responders requested more information on the capstone project topic and expressed their point of view about the challenges they had with the oil drill rig scheduling.

The results of the survey were compared with the oil drill rig scheduling challenges in order to find out the differences and similarities. These are the responses that were received from the survey:

- Simultaneous operations
- Weather
- Resource Competition
- Labor
- Equipment
- Schedule
- Personnel Skills
- Material
- Season
- Funding cycle
- Remote locations
- Productivity

- Logistics
- Operations
- Tracking projects
- Scheduling
- Schedule integration
- Resource assignments
- Cost
- Lodging
- Scope change
- Communication
- Resource competition
- Oil drill rig moves

Research Survey Data Analysis				
No	Challenges	Responses	Responders	%
1	Simultaneous Operations	5	10	50
2	Weather	4	10	40
3	Resource Competition	4	10	40
4	Labor	4	10	40
5	Equipment	3	10	30
6	Schedule	3	10	30
7	Personnel skills	3	10	30
8	Material	3	10	30
9	Season	2	10	20
10	Funding cycle	2	10	20

Exhibit 22: Research Survey Data Analysis

Exhibit 22 shows the top ten common challenge results that survey responders face while scheduling work activities in the Alaska's North Slope.

Drilling oil drill rig and the support equipment have a large layout on the drill-site and sometimes affect other project activities. According to survey research, the oil drill rigs and scheduling process are not in the top ten challenges that affect scheduling project activities.

Conclusions

This project explains all the steps required to produce a guideline for scheduling oil drill rig work activities in a remote Arctic environment. Two of the improvement areas were the oil drill rig schedule process workflow and implementing an oil drill rig schedule optimization tool.

Rig schedule processes

Three rig schedule planning processes were created for each activity class: drilling, work-over and coil tubing drilling. Although there are many similarities between the three processes, the differences are significant enough that they were addressed separately.

Also, identified the project gates and developed a checklist with the minimum criteria to enter an activity in the schedule, break-in or progress a well in the 90 day gate, and break-in or progress a well in the 28 day gate. In addition to the drilling work-over and coil tubing drilling processes, a break-in process was created to manage schedule changes within the 28 and 90 day horizon.

- **Drilling (new wells) process**
  In this application, there are no existing wells or well preparation. The construction crews must complete the surface piping work to flow the well to the production facilities.

- **Work-over process**
  In this application, there are existing wells tied into production facilities. The surface piping needs to be removed, sometimes reconfigured and installed after the work-over rig services the well.

- **Coiled Tubing Drilling process**
  Similar to the work-over application, there are existing wells tied into production facilities. The surface piping needs to be removed, sometimes reconfigured and installed after the work-over rig services the well. Most of the time, the coil tubing rig follows the work-over rigs that prepares the well prior to coil tubing drilling.

Due to corporate proprietary restrictions, the rig scheduling process documents are not included in the report. However, a high level oil drill rig schedule process description will be included to illustrate the process work flow.

High Level - Oil Drill Rig Scheduling Process

Mid-Range Planning Horizon Steps:

- Identify the well
- Complete schedule Entry punch-list
- Start the Front End Loading process (FEL)
  - Drilling FEL
  - Construction FEL
- Enter well into the rig schedule
- Complete the 90 day Gate review punch-list
  - Punch-list complete: Progress into the 90 day gate
  - Punch-list not complete: Reevaluate and reschedule the well

Short -Range Planning Horizon Steps:

- Complete pre rig work
- Complete the 28 day Gate break-in if any
  - Complete punch-list
  - Obtain management approval
  - Implement the change
  - Communicate change

Since implementing the new oil drill rig scheduling process, the scheduling conflicts are not only minimized, but nearly eliminated. All schedule break-ins are reviewed analyzed and approved by management. Only "very low impact" break-ins that add value are approved. All schedule break-ins are documented and reported to management. In 2015, less than 15 activities broke-in to the 90 day gate and only five activities broke-in into the 28 day gate. There have been no proposed break-ins rejected by management to date.

Rig Schedule Optimization Tool

The new drill rig optimization tool was identified and implemented. The tool is programmed to meet the stakeholder's needs identifying simultaneous operations opportunities and scheduling conflicts. Currently, the company optimizes the schedule based on travel distance, simultaneous-operations and road conditions.

As a result of optimizing the schedule using the tool, at least 15 scheduling conflicts were identified and mitigated in the early planning phase saving the company unnecessary expenditures.
Based on actual data, 60% of the oil drill rig schedule benefits are captured by identifying conflicts between activities scheduled at the same site and time. Due to optimization of the schedule, 20% of the oil drill rig schedule benefits are captured by identifying oil drill rig moves in restricted areas. The values of these benefits are plotted to reporting tools for management review and approval.

Implementing the proposed guidelines has improved the oil drill rig scheduling process, roles and responsibilities are more clearly defined, communication among groups has been improved and support groups have adequate time to complete their work. Results include reduction of oil drill rig move downtime and a reduction in the time to produce oil after the oil drill rig leaves the well site. As a result of improving the rig scheduling process and implementing the rig optimization tool, the company saved millions of dollars in 2015.

Recommendations

The oil drill rig optimization tools are been used widely in the oil and gas industry and has significantly improved the oil drill rig scheduling process. It is worth investing in the oil drill rig optimization tool achieve the business needs.

In order to implement a successful rig scheduling process to achieve the business goals, ensure that the objective are understood and stakeholders agree to the terms and conditions and follow the process.

Project owners might have different philosophies about the rig scheduling process. However, the process workflow must be as simple as possible in order to visualize the steps.

Develop and implement a solid break-in process in order to avoid unnecessary schedule changes within 28 day and 90 day gate horizons. Validate the schedules changes, identify and mitigate the risks for break-ins prior to proposing the changes. Document and communicate the changes to the users and all support teams in order to avoid any potential issues.

Future research

The rig scheduling optimization tool has paid significant benefits to the organization. Due to a large number of constraints, the optimization is done manually. It is worth investigating and implementing the automated optimization, perhaps starting with the long-range (two to five year horizon) planning.

Uploading the long-range planning in the tool and predicted production forecast for the new wells to be drilled on the optimization tool would help in making decisions to meet company goals.

References

Arctic Energy – For Today and Tomorrow: (BP & COP, 2006)
http://alaska.conocophillips.com/Documents/ArcticEnergy.pdf
(Accessed on September, 2015)

Division of Oil & Gas – 2014 Annual Report: (ADNR, 2014 Annual Report, 2014)
http://dog.dnr.alaska.gov/publications/documents/annualreports/2014_annual_report.pdf
(Accessed on September, 2015)

Drilling Rig Schedule Optimization: (Al Gharbi)
http://gradworks.umi.com/15/33/1533777.html; http://search.proquest.com/docview/1314580515
(Accessed on September, 2015)

Examples of technology at work in the Arctic: (API, 2008)
http://www.api.org/~/media/Files/Policy/Exploration/environment/Technology_at_Work_Arctic.pdf
(Accessed on September, 2015)

Foundation and Outlook of Alaska Oil and Gas E&P Project Execution Strategies: (Blanton, 2013).
Project Management Library, University of Alaska Anchorage
(Accessed on April, 2014)

Repsol 2014-2015 Winter Drilling Program Lease Plan of Operations Approval, Exploration Phase: (Repsol)
http://dog.dnr.alaska.gov/permitting/documents/northslope/operationplans/2014/20141226_lons_14-006_repsol_2014-15_winter_drilling_program_plan_of_operations_approval.pdf
(Accessed on September, 2015)

North Slope Tundra Travel and Ice Road Construction: (ADNR)
http://www.housemajority.org/coms/cli/dnr_menefee_schultz.pdf (accessed on September, 2015)

Oil and Gas Activity Charts: (AOGCC, Active Drilling and Workover Rigs for Each Quarter, 2015); (AOGCC, Exploratory Wells, 2015); (AOGCC, Workover Activities, 2015); (AOGCC, Development and Service Wells, 2015); (AOGCC, Alaska's Average Daily Oil and NGL Production Rate, 2015)
http://doa.alaska.gov/ogc/ActivityCharts/achtindex.html
(Accessed on September, 2015)

Stakeholder Management umbrella: (Auraujo)
http://sustainet.com/stakeholder-management/stakeholder-management-umbrella/
(Accessed on October, 2015)

Tundra Model Project: (ADNR, Tundra Travel Modeling Project)
http://dnr.alaska.gov/mlw/tundra/TundraModelReport.pdf (accessed on September, 2015)

Unit Working Interest Ownership, North Slope: (ADNR, Unit Working Interest Ownership, North Slope, 2015)
http://dog.dnr.alaska.gov/publications/documents/northslope/ns_wio_online_201509.pdf
(Accessed on September, 2015)

Glossary

AFE - Approval for Expenditure, it is the decision gate at the end of the third Front-End-Loading (FEL) stage, as shown in Exhibit 20. (Blanton, 2013)

FEL – according to (Blanton, 2013) it is a term coined by the DuPont Company. Front-End-Loading is the work process that prepares a project for financial investment decisions and the most business-effective way to carry-out the project work. FEL is usually formatted into three stages: business planning, facility planning, and project planning.

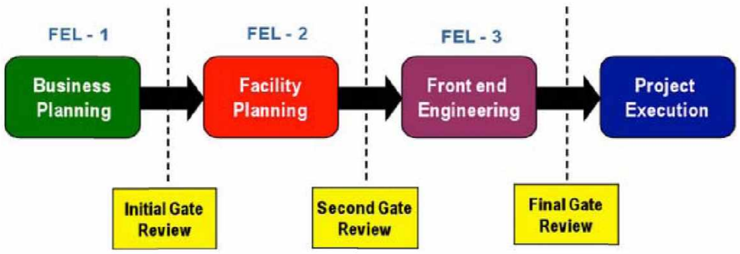


Exhibit 23: Front End Loading Process

Source: Front End Loading Process Images

Fishbone diagram – (Cause–and–Effect Diagram, Ishikawa Diagram) illustrates the relationship between a subject (effect) and the factors connected to it (causes). The diagram looks like the skeleton of a fish, the bones are factors combined to form categories (causes). The categories shape the topic that is placed in the head of the fish (effect). (Blanton, 2013)

Brain-writing - Is a group structured brain-writing technique aimed at aiding innovation processes by stimulating creativity developed by Bernd Rohrbach who originally published it in a German sales magazine, the Absatzwirtschaft, in 1968. (Wikipedia)

Oil drill rig – An oil drill rig is a machine which creates holes in the earth sub-surface and installs underground utilities. (Wikipedia)

Well Completion – the process of installing underground utilities

Rotary oil drill rigs - Large machines used for drilling activities and install underground utilities in order to connect the oil reservoir with subsurface infrastructures. (Wikipedia)

Coil tubing oil drill rigs – Large machines used for drilling activities and install underground utilities in order to connect the oil reservoir with subsurface infrastructures. (Wikipedia)

Coiled tubing - Is a long metal pipe, normally 1 to 3.25 in (25 to 83 mm) in diameter which is supplied spooled on a large reel. (Wikipedia)

Oil well - An oil well is a boring in the Earth that is designed to bring petroleum oil hydrocarbons to the surface.

Operator/Owner - oil and gas entity, "who has the oil drill right to drill into and produce from a pool and to appropriate the oil and gas the person produces from a pool for that entity and others" (Blanton, 2013)

Producer – "the owner of a well or wells capable of producing oil or gas or both" (Blanton, 2013)

Break-in – Break-in jobs is a term used for identifying jobs that are added to a schedule without proper lead time allowed for planning and scheduling

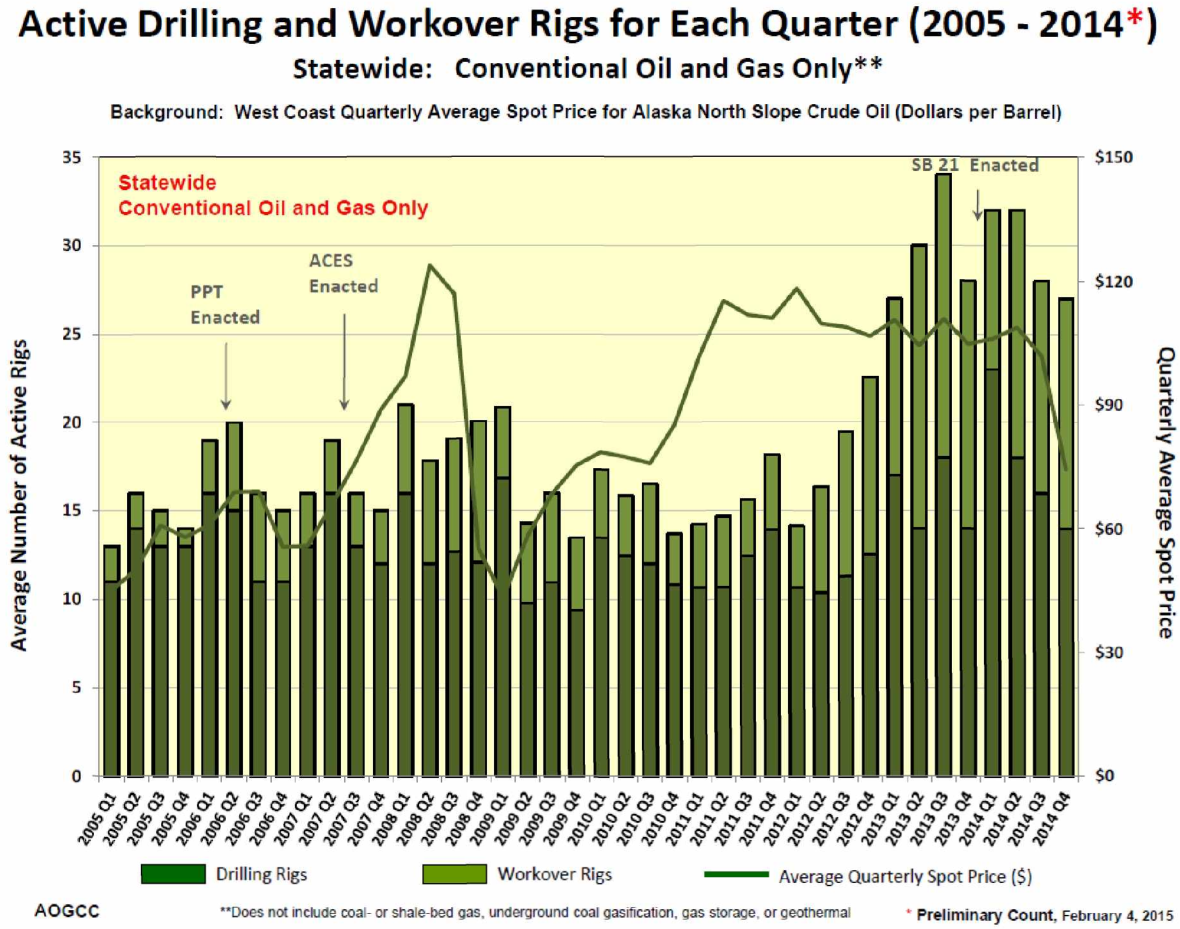
Work-over – Well maintenance or repair activity

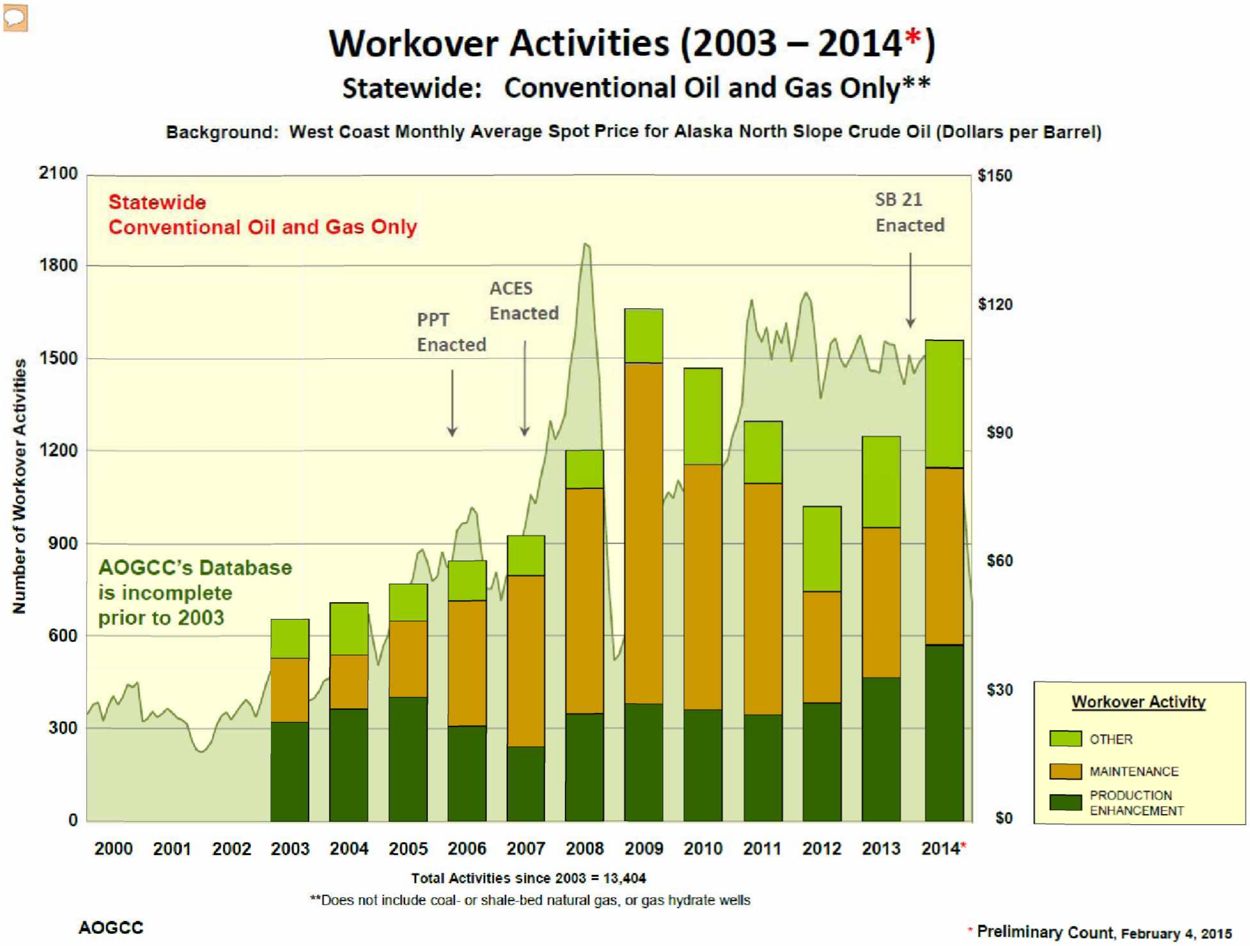
Tail-roll – Transportation method

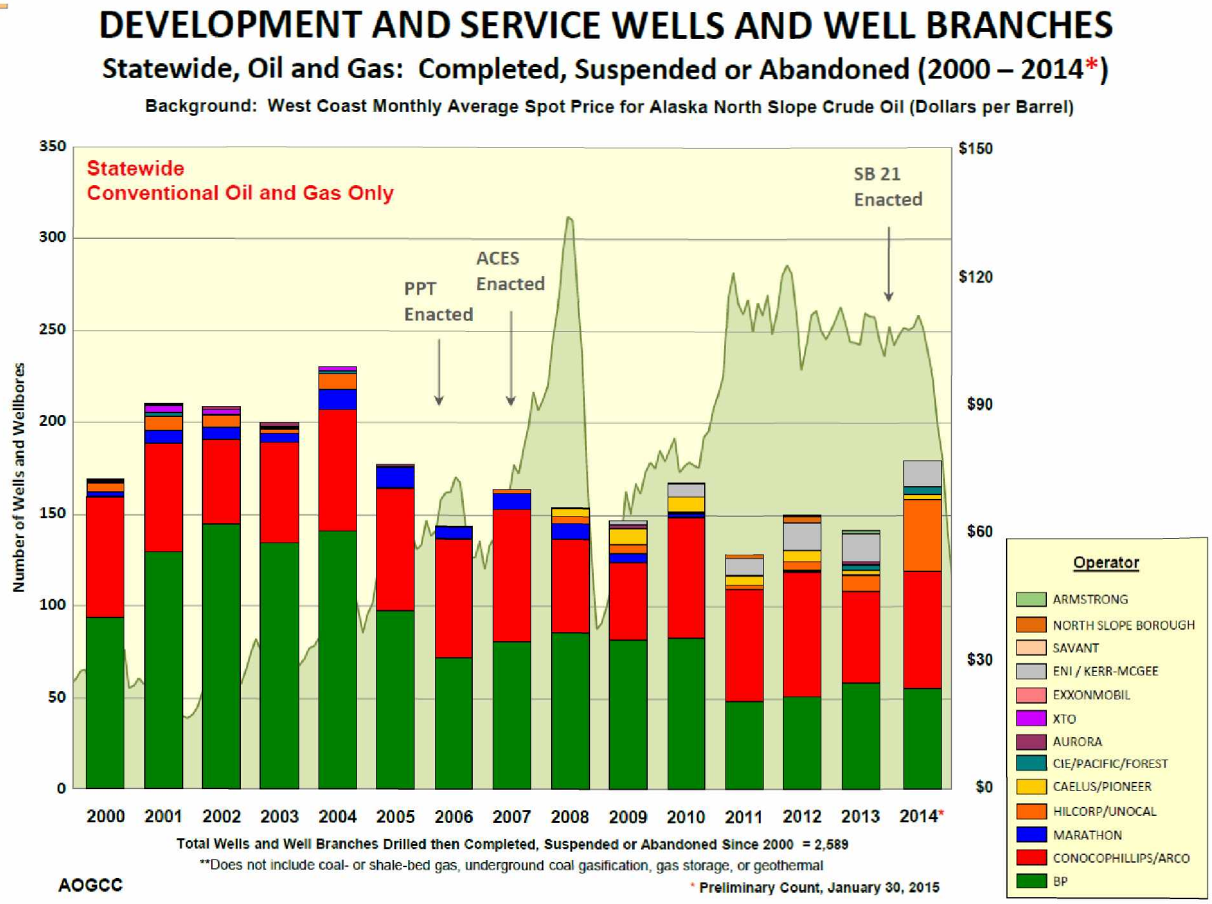
Tundra travel season - Timeframe announced by the Alaska department of Natural Resources to travel in the tundra (ADNR, Tundra Travel Modeling Project)

Appendixes

Appendix 1 - North Slope Oil and Gas Activity



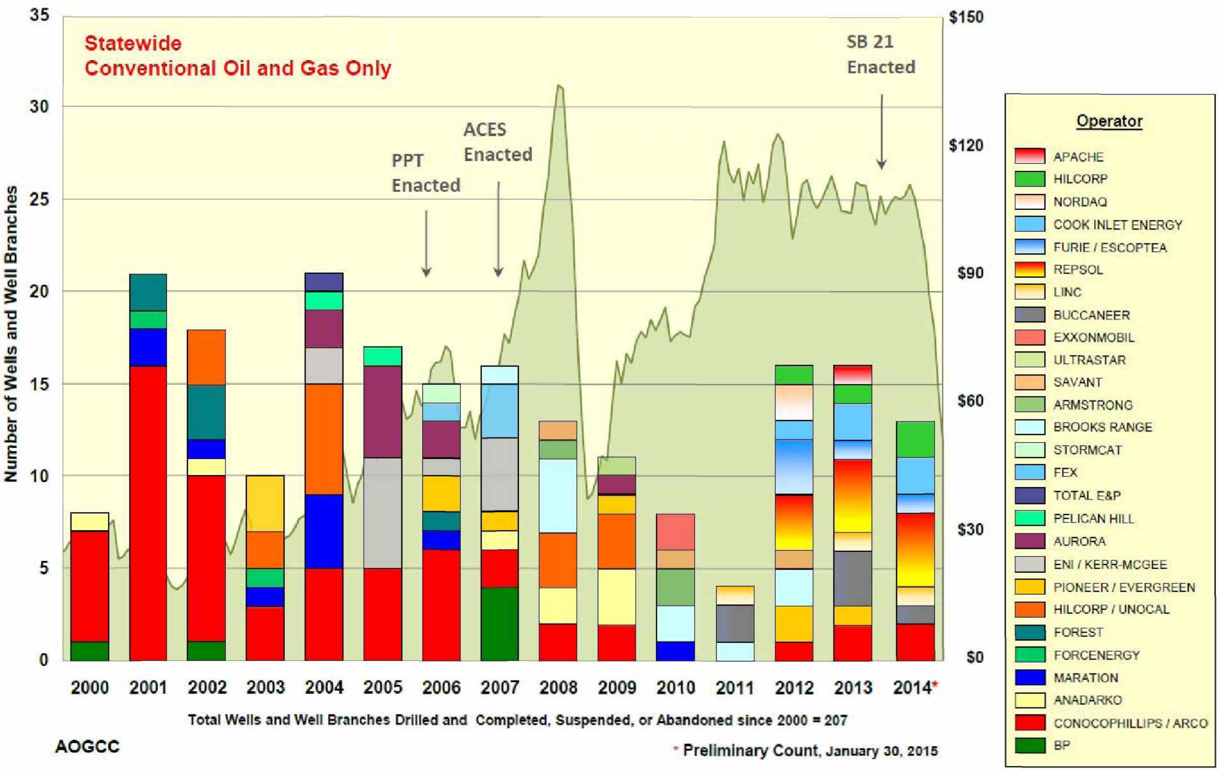

Workover Activities (2003 – 2014*)
Statewide: Conventional Oil and Gas Only**
Background: West Coast Monthly Average Spot Price for Alaska North Slope Crude Oil (Dollars per Barrel)
Statewide
Conventional Oil and Gas Only
AOGCC's Database is incomplete prior to 2003
PPT Enacted
ACES Enacted
SB 21 Enacted
Number of Workover Activities
0
300
600
900
1200
1500
1800
2100
$0
$30
$60
$90
$120
$150
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014*
Workover Activity
OTHER
MAINTENANCE
PRODUCTION ENHANCEMENT
Total Activities since 2003 = 13,404
**Does not include coal- or shale-bed natural gas, or gas hydrate wells
AOGCC
* Preliminary Count, February 4, 2015

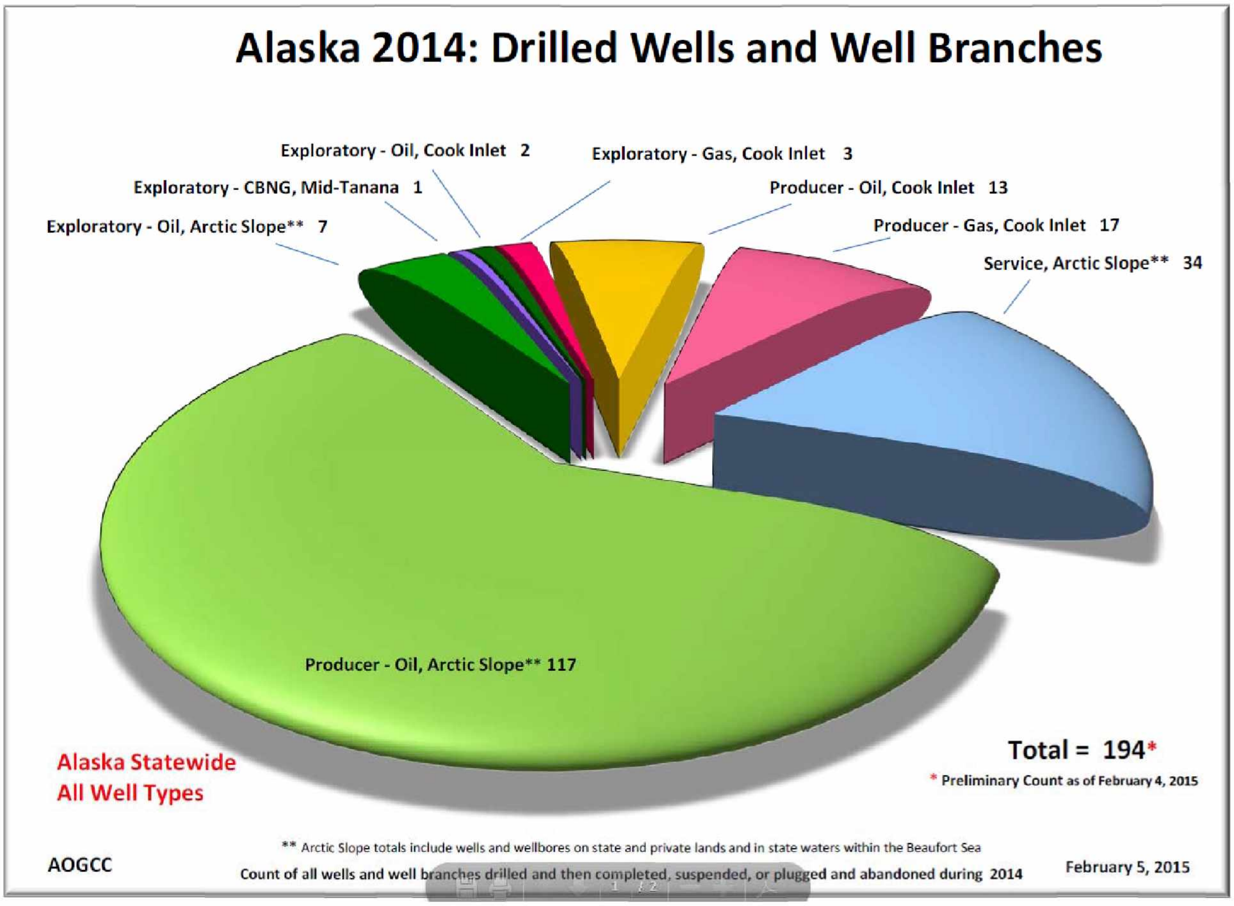

DEVELOPMENT AND SERVICE WELLS AND WELL BRANCHES
Statewide, Oil and Gas: Completed, Suspended or Abandoned (2000 – 2014*)
Background: West Coast Monthly Average Spot Price for Alaska North Slope Crude Oil (Dollars per Barrel)
Statewide
Conventional Oil and Gas Only
SB 21
Enacted
ACES
Enacted
PPT
Enacted
Number of Wells and Wellbores
350
300
250
200
150
100
50
0
$150
$120
$90
$60
$30
$0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014*
Total Wells and Well Branches Drilled then Completed, Suspended or Abandoned Since 2000 = 2,589
**Does not include coal- or shale-bed gas, underground coal gasification, gas storage, or geothermal
AOGCC
* Preliminary Count, January 30, 2015
Operator
ARMSTRONG
NORTH SLOPE BOROUGH
SAVANT
ENI / KERR-MCGEE
EXXONMOBIL
XTO
AURORA
CIE/PACIFIC/FOREST
CAELUS/PIONEER
HILCORP/UNOCAL
MARATHON
CONOCOPHILLIPS/ARCO
BP

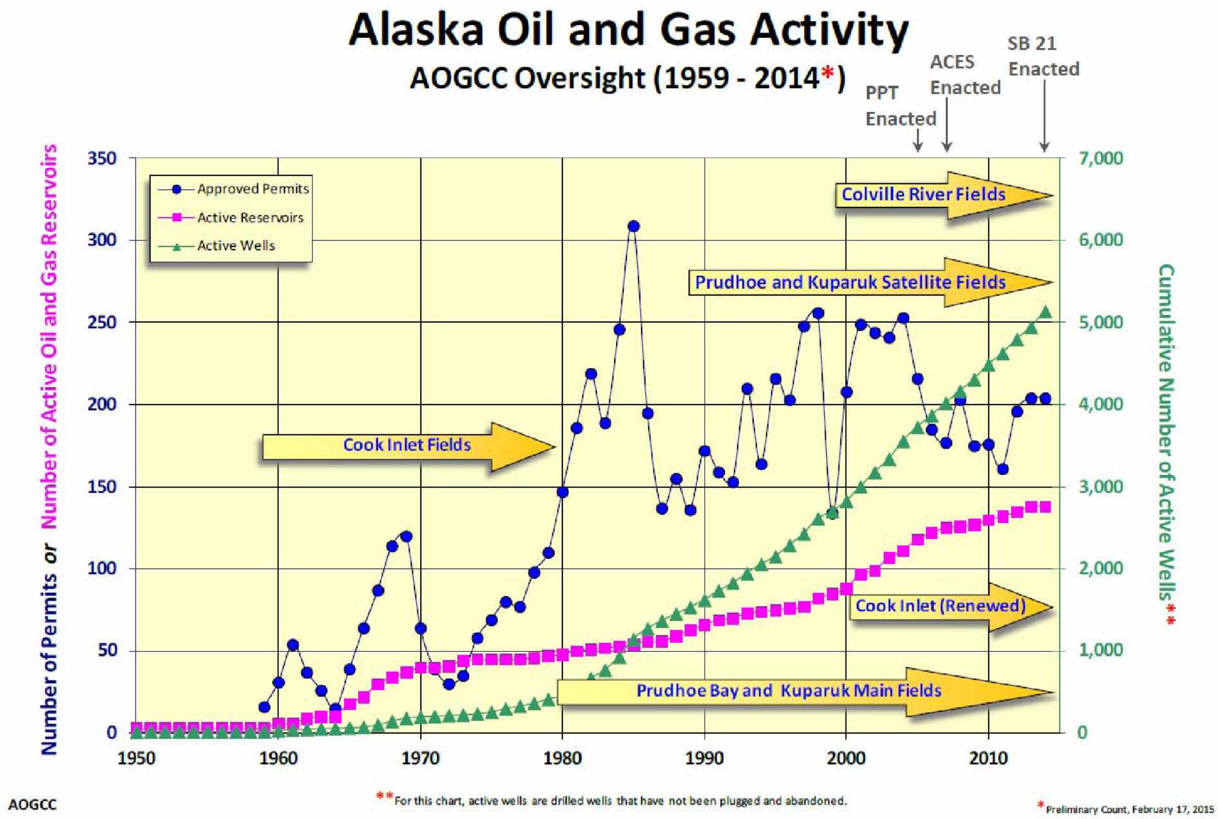
EXPLORATORY (WILDCAT / DELINEATION) WELLS AND WELL BRANCHES

Statewide, Oil and Gas: Completed, Suspended or Abandoned (2000 – 2014*)

Background: West Coast Monthly Average Spot Price for Alaska North Slope Crude Oil (Dollars per Barrel)



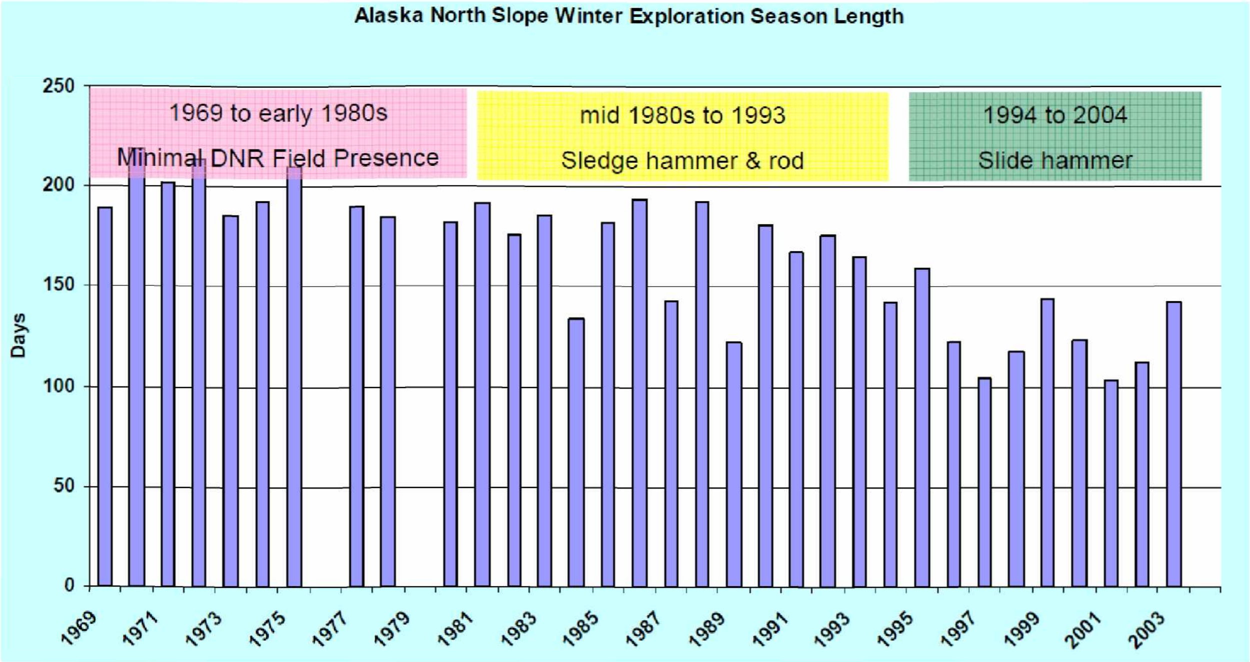

Alaska 2014: Drilled Wells and Well Branches
Exploratory - Oil, Cook Inlet 2
Exploratory - Gas, Cook Inlet 3
Exploratory - CBNG, Mid-Tanana 1
Producer - Oil, Cook Inlet 13
Exploratory - Oil, Arctic Slope** 7
Producer - Gas, Cook Inlet 17
Service, Arctic Slope** 34
Producer - Oil, Arctic Slope** 117
Alaska Statewide
All Well Types
Total = 194*
* Preliminary Count as of February 4, 2015
** Arctic Slope totals include wells and wellbores on state and private lands and in state waters within the Beaufort Sea
AOGCC
Count of all wells and well branches drilled and then completed, suspended, or plugged and abandoned during 2014
February 5, 2015

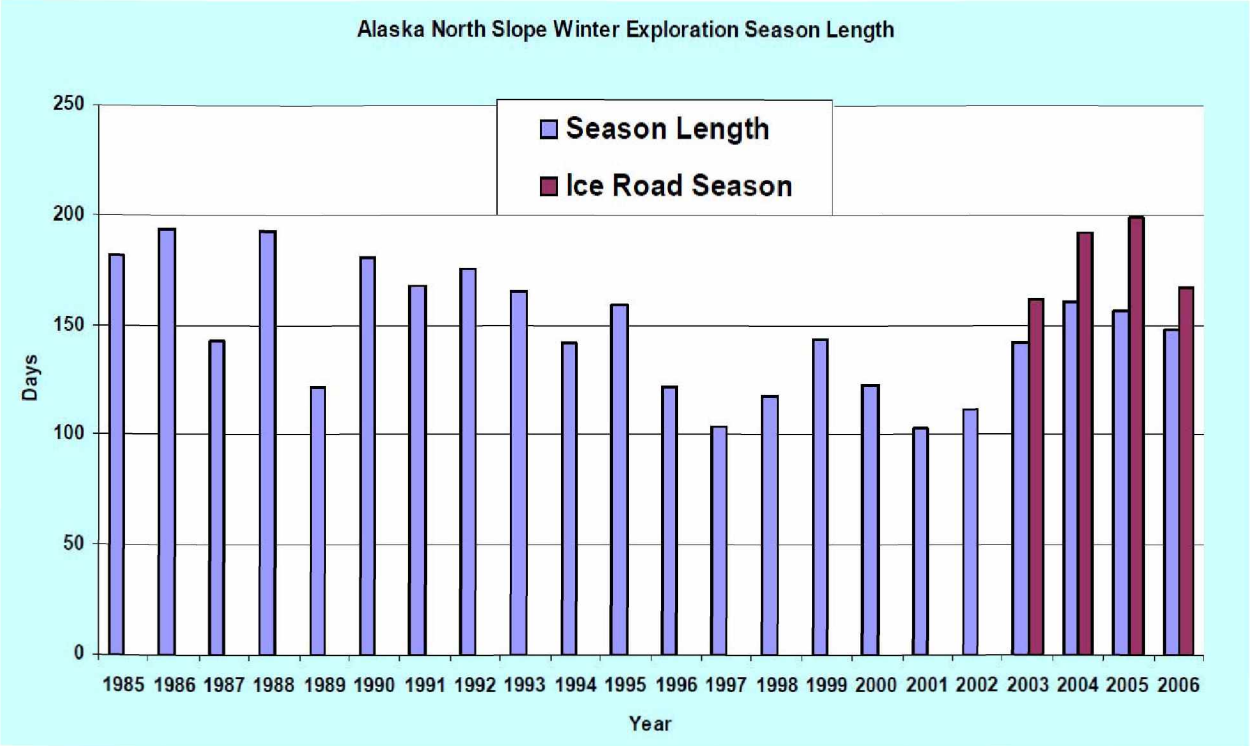


Alaska Oil and Gas Activity
AOGCC Oversight (1959 - 2014*)
PPT Enacted
ACES Enacted
SB 21 Enacted
Approved Permits
Active Reservoirs
Active Wells
Colville River Fields
Prudhoe and Kuparuk Satellite Fields
Cook Inlet Fields
Cook Inlet (Renewed)
Prudhoe Bay and Kuparuk Main Fields
Number of Permits or Number of Active Oil and Gas Reservoirs
Cumulative Number of Active Wells**
AOGCC
**For this chart, active wells are drilled wells that have not been plugged and abandoned.
*Preliminary Count, February 17, 2015

Appendix 2 - Tundra Data

Length of winter work Season from 1969-2003





Tundra Opening and Closing Dates for Tundra Travel

OPEN	CLOSE
13-Nov-69	21-May-70
20-Oct-70	27-May-71
1-Nov-71	20-May-72
1-Nov-72	4-Jun-73
15-Nov-73	20-May-74
18-Nov-74	30-May-75
1-Nov-75	28-May-76
Unknown-1976	29-May-77
25-Nov-77	3-Jun-78
4-Nov-78	8-May-79
Unknown-1979	20-May-80
7-Nov-80	9-May-81
11-Nov-81	22-May-82
4-Nov-82	29-Apr-83
15-Nov-83	18-May-84
5-Jan-85	20-May-85
4-Dec-85	4-Jun-86
7-Nov-86	20-May-87
13-Dec-87	3-May-88
16-Nov-88	29-May-89
11-Jan-90	14-May-90
19-Nov-90	19-May-91
27-Nov-91	12-May-92
21-Nov-92	17-May-93
6-Dec-93	20-May-94
8-Dec-94	29-Apr-95
4-Dec-95	10-May-96
6-Jan-97	9-May-97
7-Jan-98	21-Apr-98

Tundra Opening and Closing Dates for Tundra Travel

OPEN	CLOSE
14-Jan-99	12-May-99
20-Dec-99	11-May-00
10-Jan-01	14-May-01
25-Jan-02	8-May-02
20-Jan-03 - West Coastal	9-May-03 - Upper Foothills
20-Jan-03 - Lower Foothills	9-May-03 - Lower Foothills
27-Jan-03 - General Opening	19-May-03 - General Closure
23-Dec-03 - Eastern Coastal	5-May-04- Upper Foothills
9-Jan-04 - Western Coastal	13-May-04- General Closure
28-Jan-04 - L & U Foothills	

Appendix 3 - Survey Data

Survey Responder 1	Survey Responder 2	Survey Responder 3	Survey Responder 4	Survey Responder 5
Remote Location	Material availability	Changing priorities	Keeping projects on schedule on the slope	Weather
Cold Environment	Labor availability	High priority projects are worked concurrently	Short weather windows for certain activities	Labor
Limited Construction Season	Sim-ops issues	Productivity is less in the winter	High volume of work activities happening simultaneously and not integrated	Materials
Limited Equipment Resources	Weather	Permitting cycle times	Gaining alignment early in the project to allow proper planning and resourcing	Equipment
Limited Materials Availability	Operational issues	Funding cycle durations - partner approval required	Building and maintaining a team that can stay cohesive and focused	Scheduling
Limited Qualified Personnel		SIMOPS	Overly complex project delivery system that is "tweaked" constantly	High Risk work
Productivity		Brownfield work	Lack of experience with the organization's project delivery process.	HSE
Logistics				Acclimation (People)
				Sourcing Labor
				Wildlife

Survey Responder 6	Survey Responder 7	Survey Responder 8	Survey Responder 9	Survey Responder 10
Achieving funding approval in a timely manner	Competent Workforce	Schedule logic	Frequently, weather conditions are too severe to progress work. Schedules can get compressed.	Rig moves are unpredictable. When I worked in the field, unless a note said the rig was moving I typically ignored it.
Meeting POP times when wells require substantial surface facility modifications	Lack of Equipment	Resource assignments	Simultaneous Operations. Greater activity levels field-wide make plans more complex.	Communication around why there are changes to the schedule are not always well communicated.
Business interruptions due to Sim Ops	Cost	Lodging	Scope creep/change. Often it is difficult to obtain alignment with all the stakeholders	Some people believe the rig is always has priority due to the high cost of operations.
Efficient and timely rig moves	Native Corporations	Long Leads Materials	Limited skilled personnel to complete work. For example, welders are often a limitation.	
	Lodging		Communications; Cellular networks or satellite communication is costly and not always reliable.	
			Competition for other common resources.	

Survey Data Analisis			
Challenges	Responses	Responders	%
Simultaneous Operations	5	10	50
Weather	4	10	40
Resource Competition	4	10	40
Labor	4	10	40
Equipment	3	10	30
Schedule	3	10	30
Personnel skills	3	10	30
Material	3	10	30
Season	2	10	20
Funding cycle	2	10	20

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

FINAL PROJECT PRESENTATION

University of Alaska Anchorage
Fall 2015

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

Alket Mici
December, 2015
University of Alaska Anchorage

Contents

Project manager's background

- **Nabors Alaska Drilling**, a Nabors Industries Company, Operations engineer
  - White hills project (Chevron)
  - Coil tubing drilling rig CDR2 (ConocoPhillips)
  - Work-over/service drilling rigs (BP)

- **Jago Contracting & Management (SolstenXP)**, Field design engineer
  - Pt. Thompson project (ExxonMobil)

- **SolstenXP**, Drilling engineer/project scheduling and management
  - Alaska project control's department (Repsol)
  - Cook Inlet energy and Great Bear

Project manager's background

- **ConocoPhillips Alaska**, Drilling & Wells Integrated Planning Engineer
  - Led the team to create the oil drill rig scheduling guidelines and processes
  - Implemented the new rig schedule optimization tool

- Since implementing the rig scheduling guidelines third quarter, 2014
  - The rig scheduling process has improved
  - Roles and responsibilities are clearly defined
  - Communications between groups has improved
  - Drill rig move downtime is reduced
  - Time to produce oil after the rig leaves the well site is reduced

As a result of improving the rig scheduling process and implementing the rig optimization tool, the company has saved millions of dollars.

Business Case

- New development opportunities and investments in the Alaska's North Slope
  - Increased in number of developments and exploration projects
  - Increased in number of drilling and well repair activities

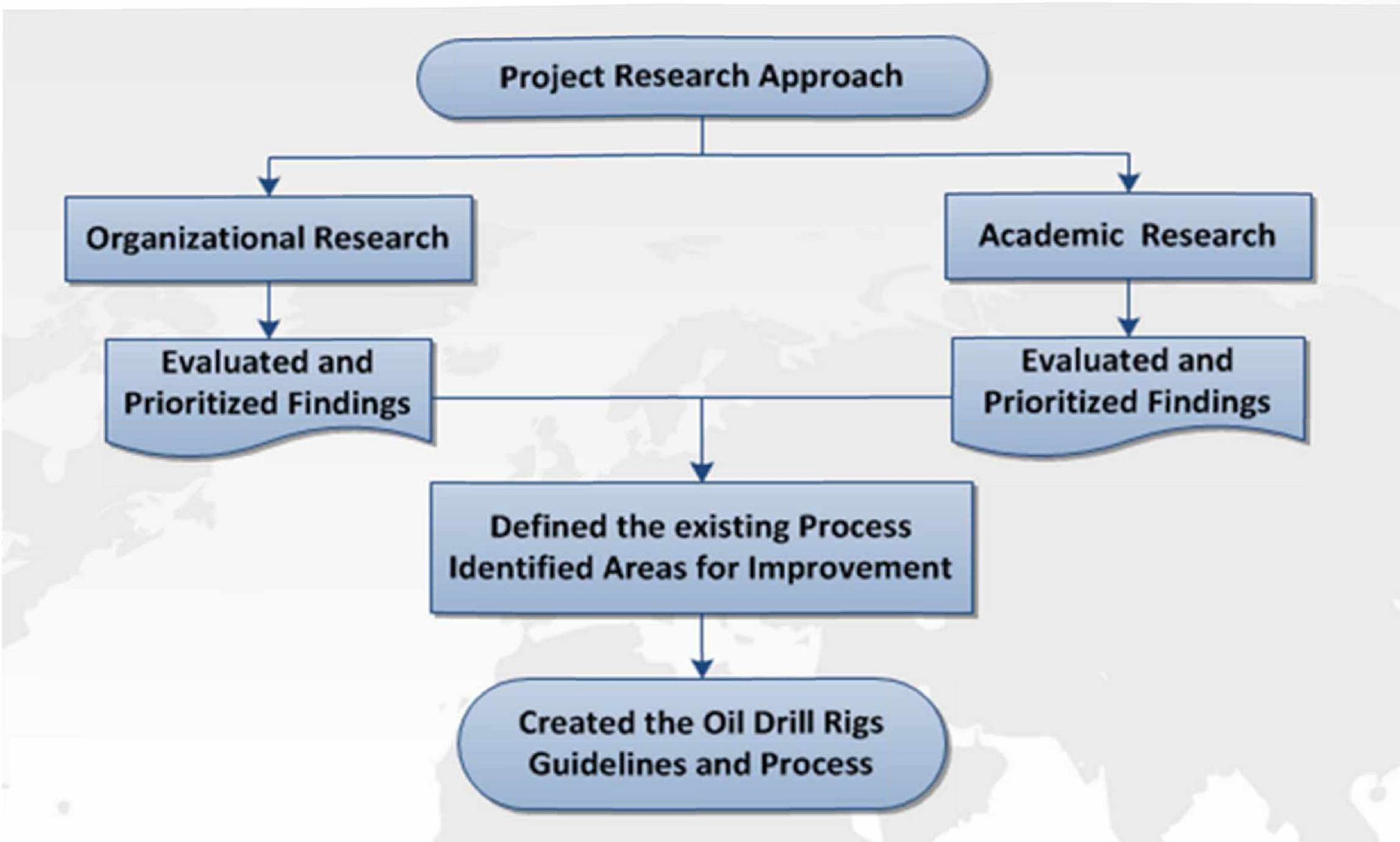
- Undocumented rig scheduling process
  - Unstable drill rig schedule
  - Simultaneous-operations with other groups not considered

As of result, there were numerous conflicts with other activities and it took longer to produce oil after the rig moves from the well site

Project Goals & Objectives

- Explain the steps required to improve the oil drill rig scheduling process
- Share professional experience with other groups and project managers
- Contribute to the body of knowledge of oil and gas projects and project management
- Demonstrate mastery of project management processes

Project Research Approach



Organizational Research

- **Project owners**
  - Reservoir development
  - Rotary and coil tubing drilling
  - Work-overs/well maintenance
- **Organizational survey**
  - Construction/Well tie-in
  - Drilling equipment support
- **Alaska's North Slope operators**
  - North Slope operators and partners
- **Company wide**
  - Other business units research

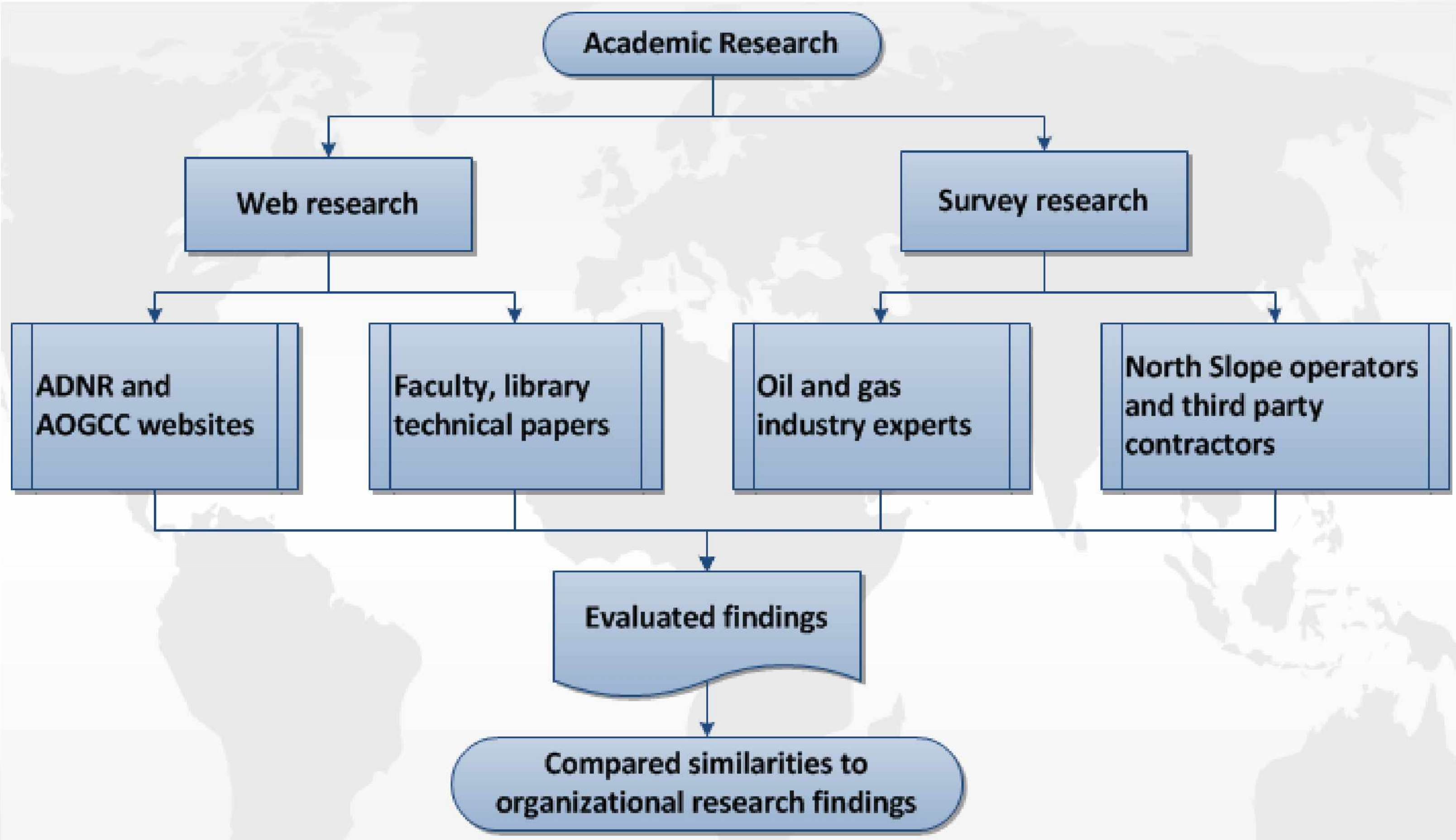
Organizational Research

Academic Research

- **Web Research**
  - North Slope Alaska Drilling & Work-Over Rigs
  - Drilling Contractors and Rig Move Resources
  - Remote Location / Accessibility
  - Season
  - Weather
  - Oil Drill Rig Schedule Optimization

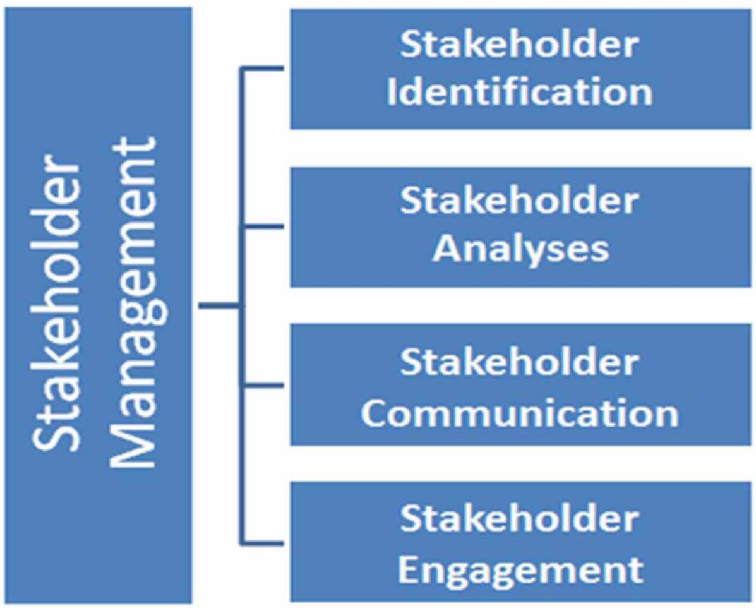
- **Survey Research**
  - Survey analysis

Academic Research



PM 686B

Stakeholder Management



Stakeholder management umbrella (Auraujo)

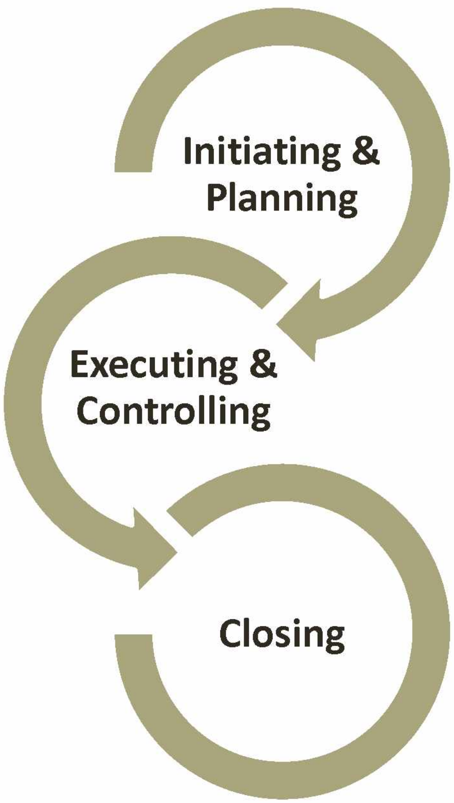
- Internal stakeholders
- External stakeholders

- Requirement traceability matrix
- Stakeholder register

- Scheduled meetings
- Distribute meeting notes
- Report progress

- Required meeting participation
- Required feedback

Knowledge areas



- **Scope management**
  - Change management process
- **Communication management**
  - Communication management process
- **Time management**
  - Critical chain and feeding buffers approach

Areas for Improvement

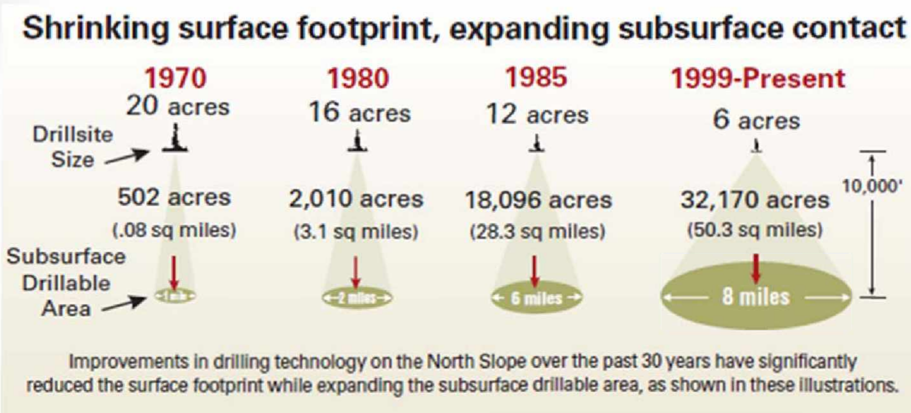
- **Oil drill rig schedule process**
  - Process workflow
  - Rig schedule guidelines
- **Oil drill rig scheduling tool**
  - Rig schedule optimization tool

Drill Rig Scheduling Process

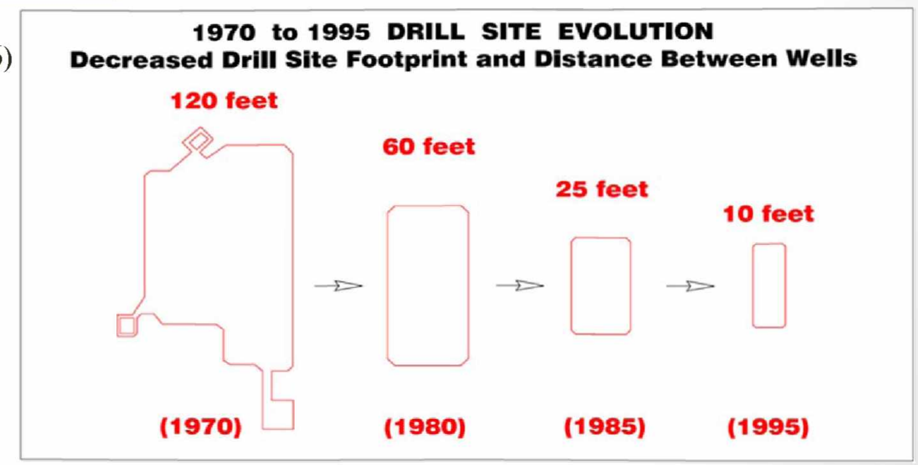
- **Top five areas for improvement:**
  - Simultaneous-operations
  - Project funding
  - Schedule break-in
  - Schedule communication
  - Oil drill rig moves

- **Top five drill rig schedule constraints:**
  - Oil drill rigs and oil drill rig move resources
  - Remote location
  - Weather
  - Season
  - Road conditions

Simultaneous Operations

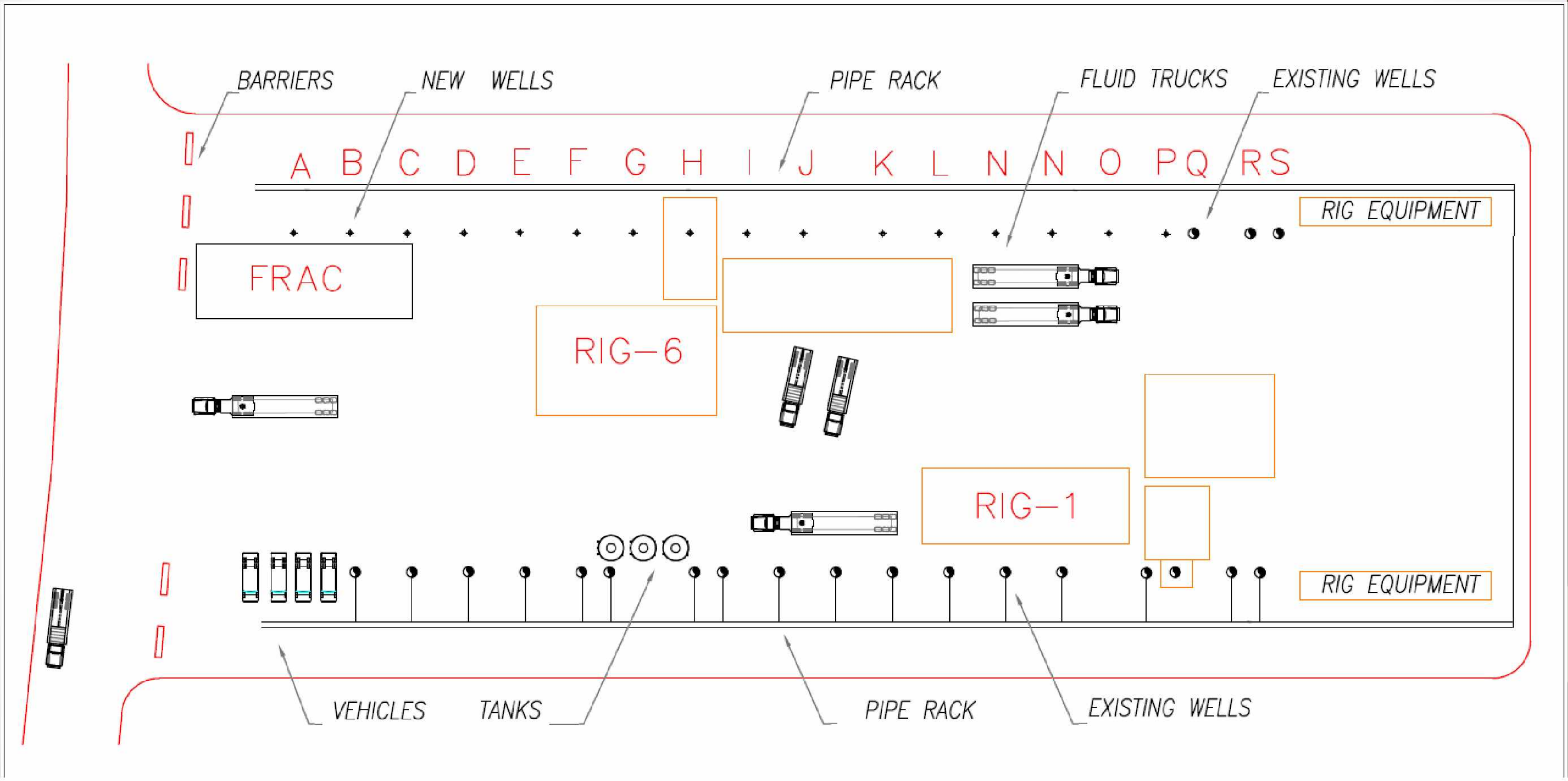


Arctic Energy – For Today and Tomorrow: (BP & COP, 2006)

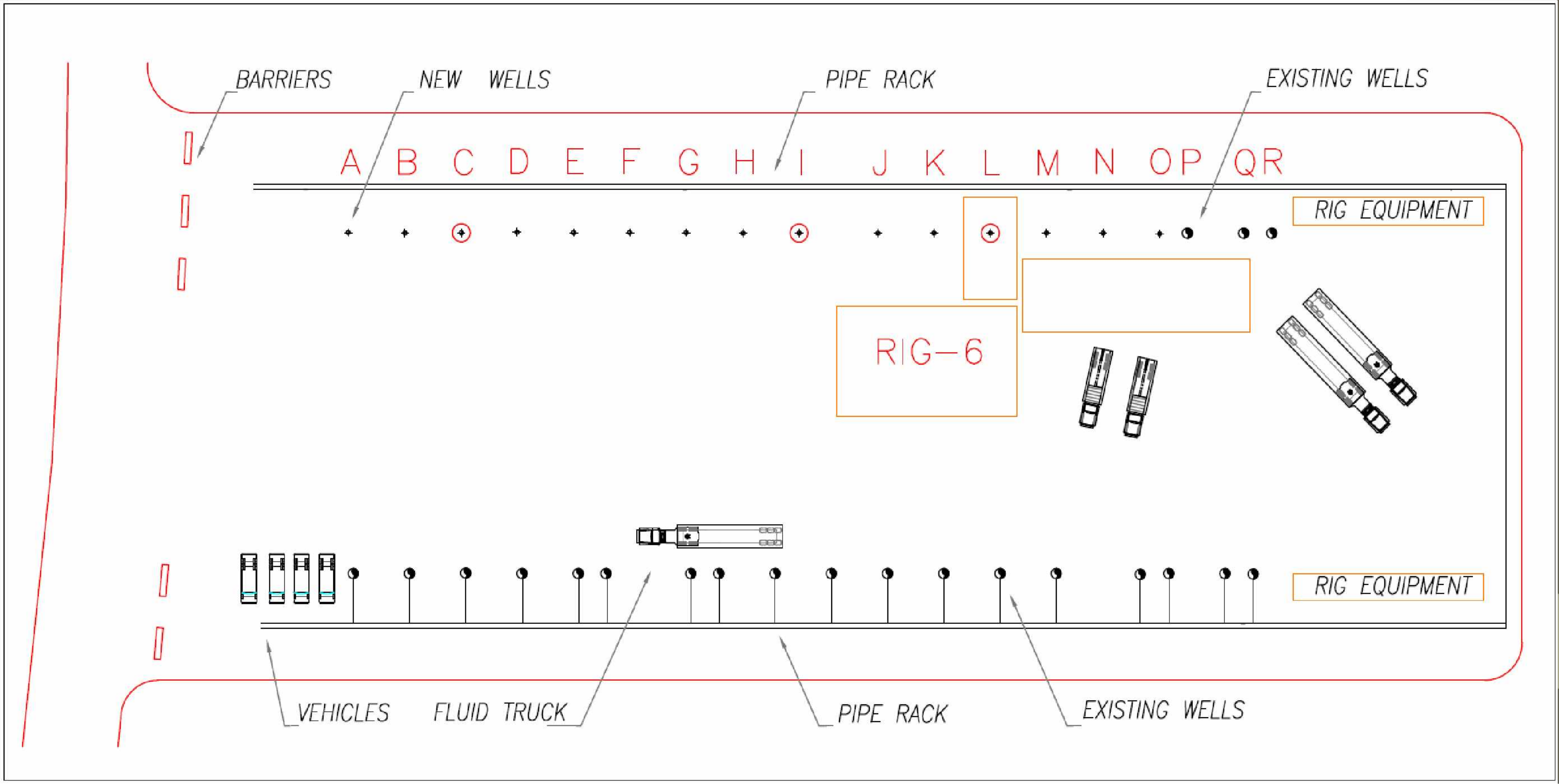


Exploring for America's Energy Future, API 2008

Simultaneous Operations

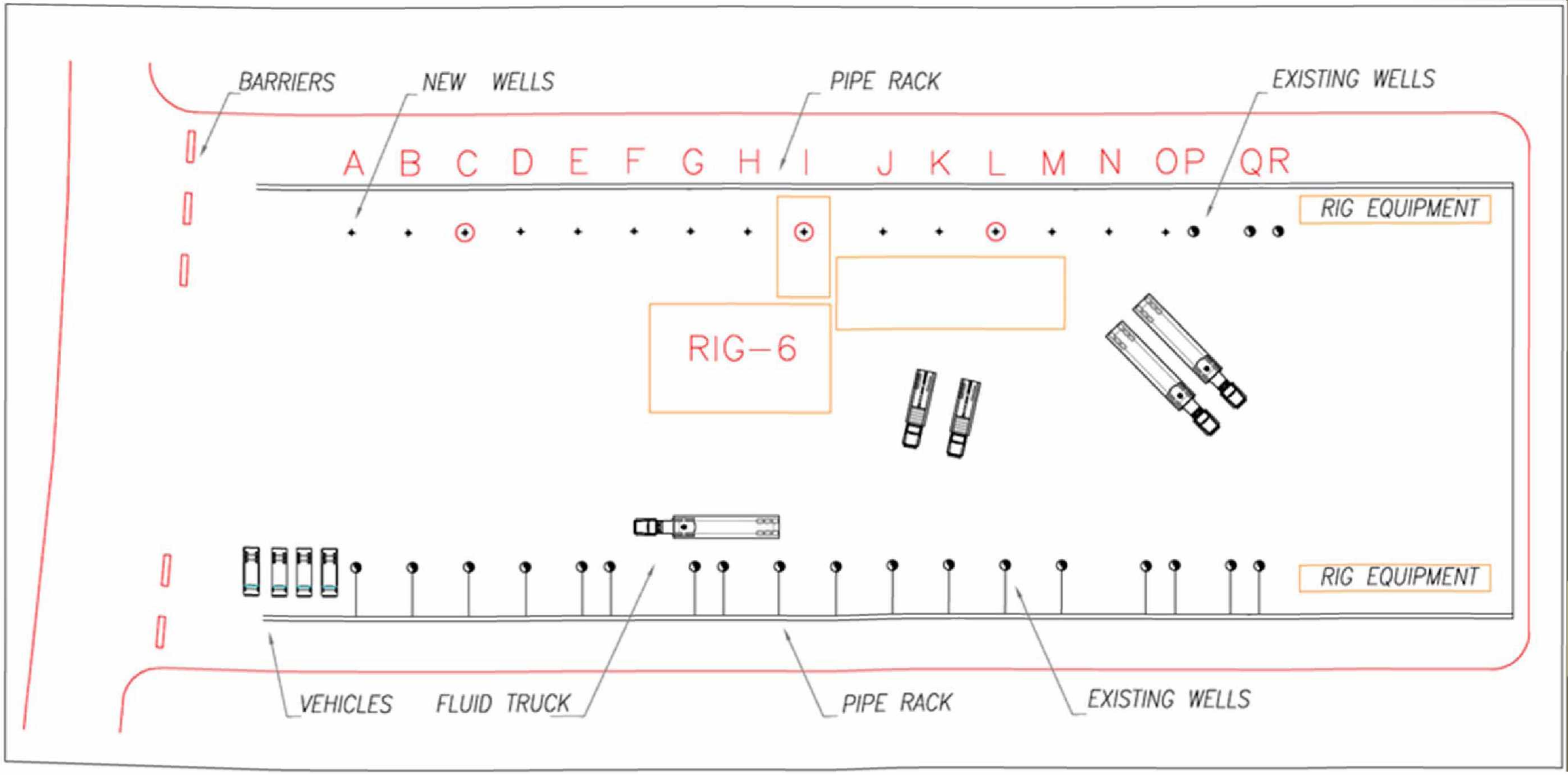


Schedule Sequencing

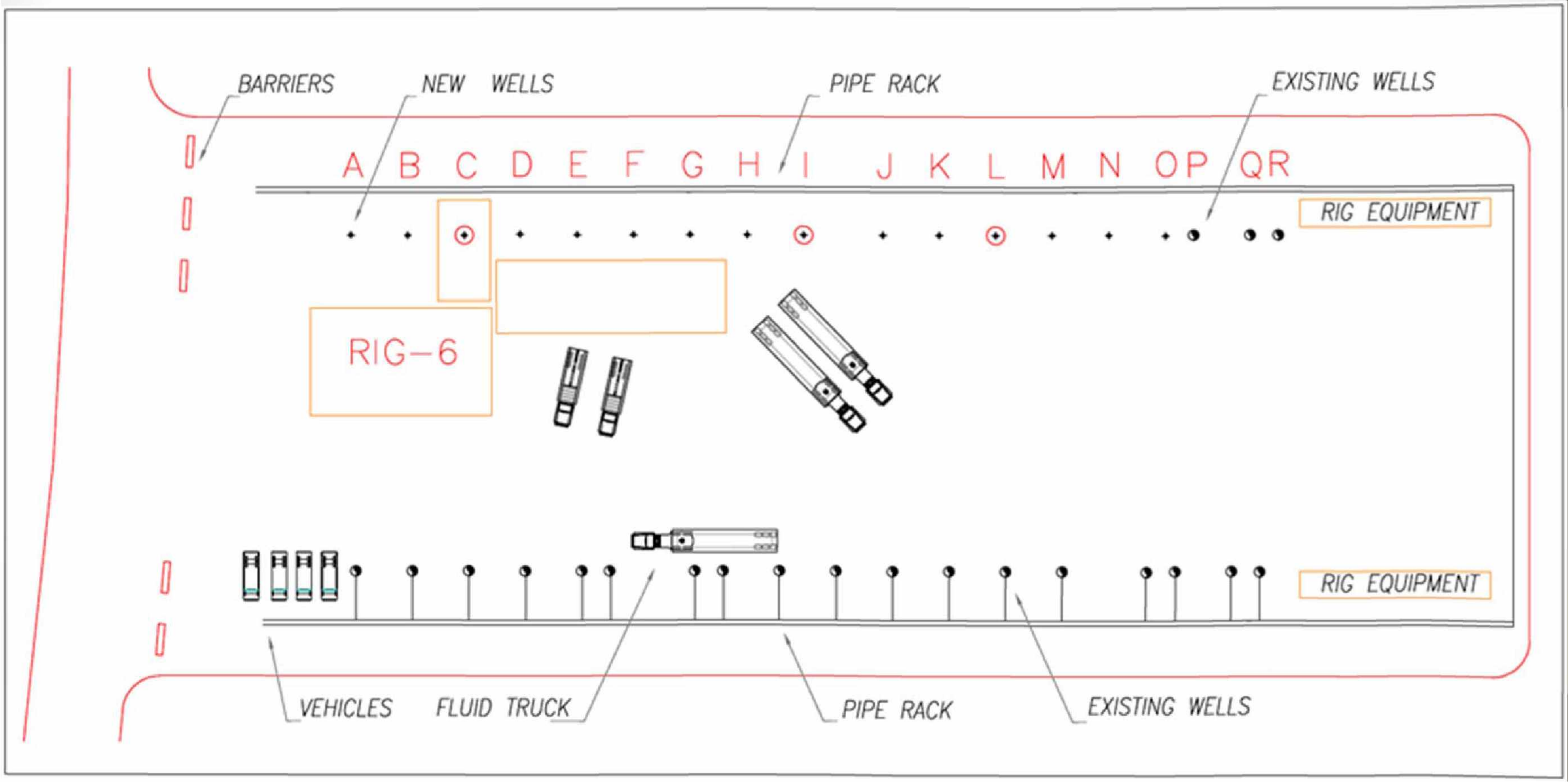


PM 686B

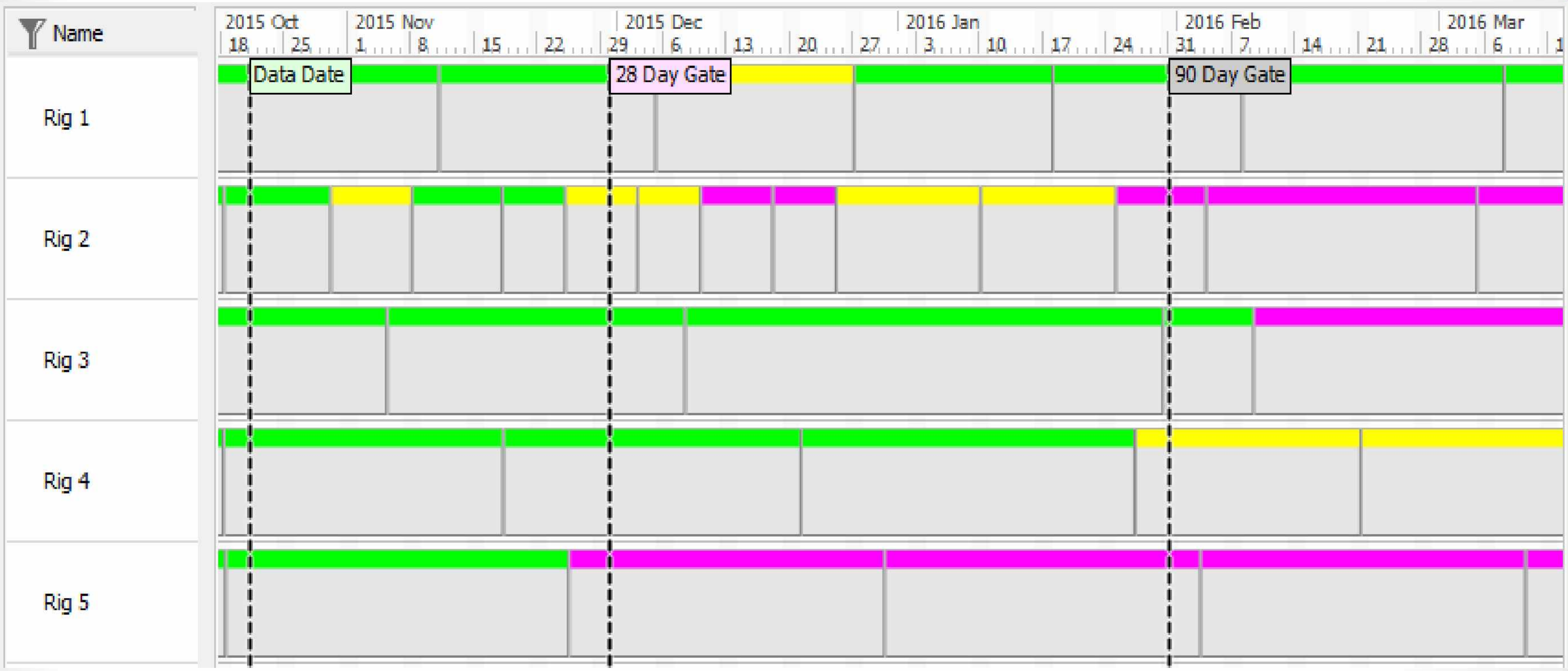
Schedule Sequencing - Scenario 1



Schedule Sequencing - Scenario 2



Project Funding



AFE Approved; FEL Approved; FEL in Progress

AFE – Authorization for expenditure; FEL – Front end loading

Schedule Communication

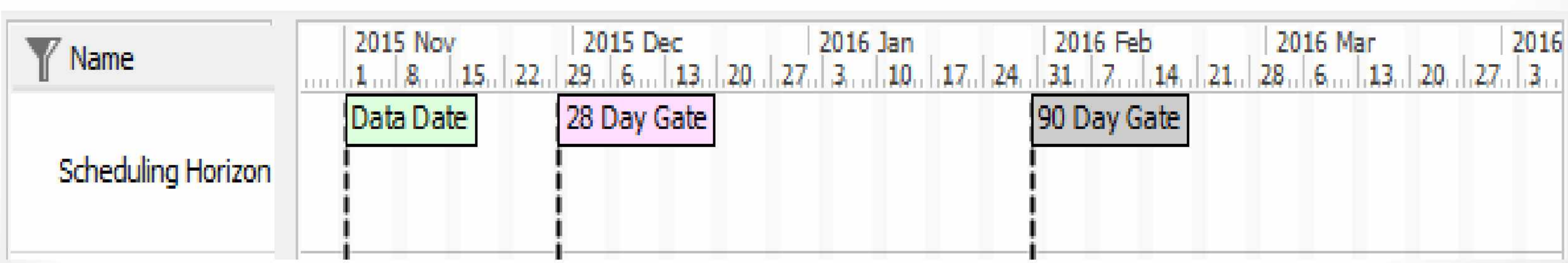
- **Schedule integration**
  - Drilling
  - Capital projects
  - Maintenance

- **Improved the rig schedule meeting**
  - Evaluate schedule changes prior to the meeting
  - Complete checklist and obtain break-in approvals prior to meeting
  - Send meeting notes after the meeting

Process Gates

- **Planning horizons**

  - **Long-range** - Greater than two years from the execution date
  - **Mid-range** - 90 days to 2 years from the execution date
  - **Short-range** - 90 days from the execution date



Schedule Checklist

- Entry gate – Minimum criteria to enter a well in the schedule
- 90 day gate - Minimum criteria to progress or break-in a job in the schedule
- 28 day gate - Minimum criteria to progress or break-in a job in the schedule

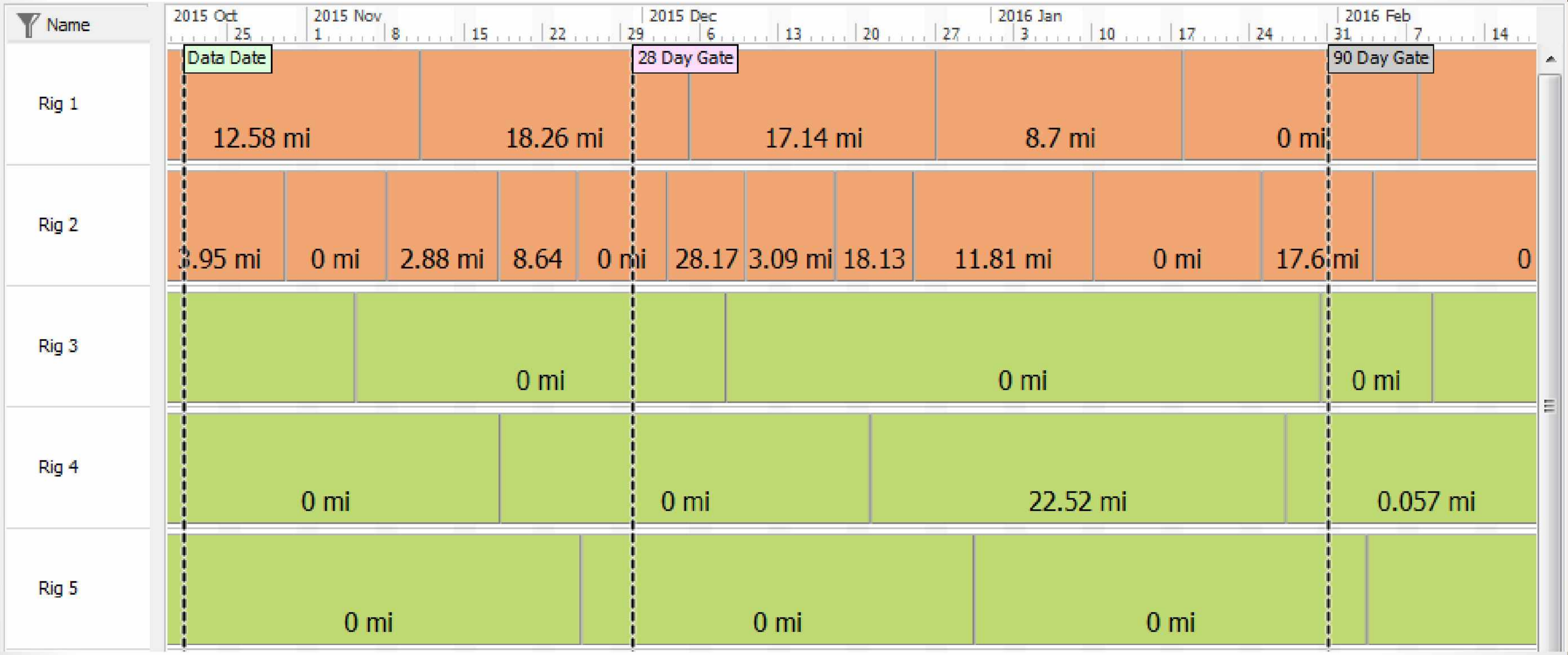
Oil Drill Rig Classification

- **Drill Rig Classification**
  - Rotary drilling
  - Coil tubing drilling
  - Work-overs/service
- **Drill Rigs Moving System**
  - Oil drill rigs traveling on wheels.
  - Oil drill rigs traveling on "tracks"
  - Oil drill rigs mounted on "skids"
  - Oil drill rigs traveling on "walking system"

Oil Drill Rig Scheduling Tool

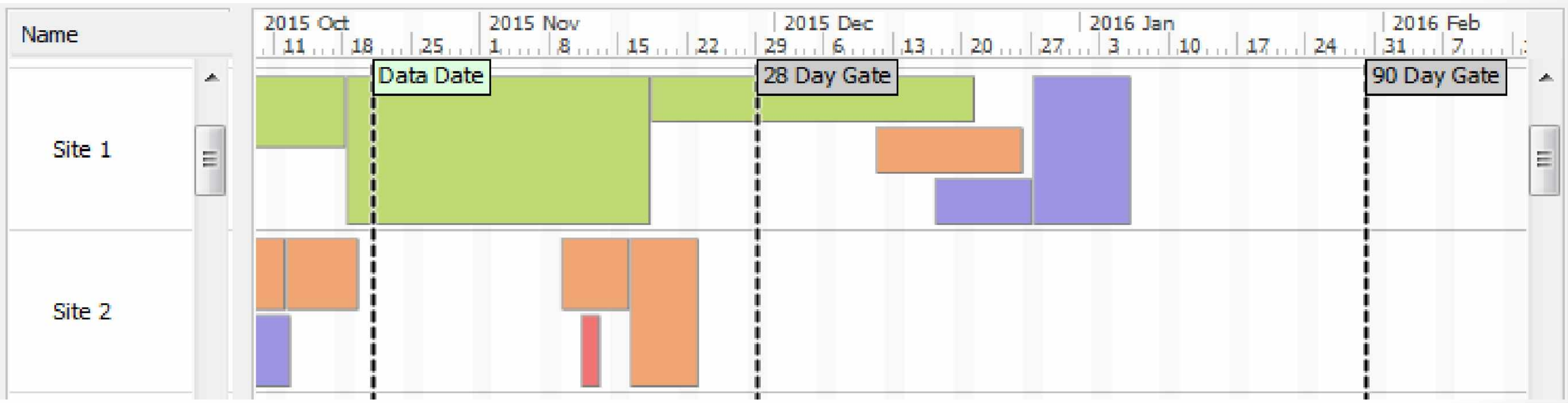
- Travel Distance Optimization
- Simultaneous Operations Optimization
- Roads Condition Optimization
- Production Optimization

Travel Distance Optimization



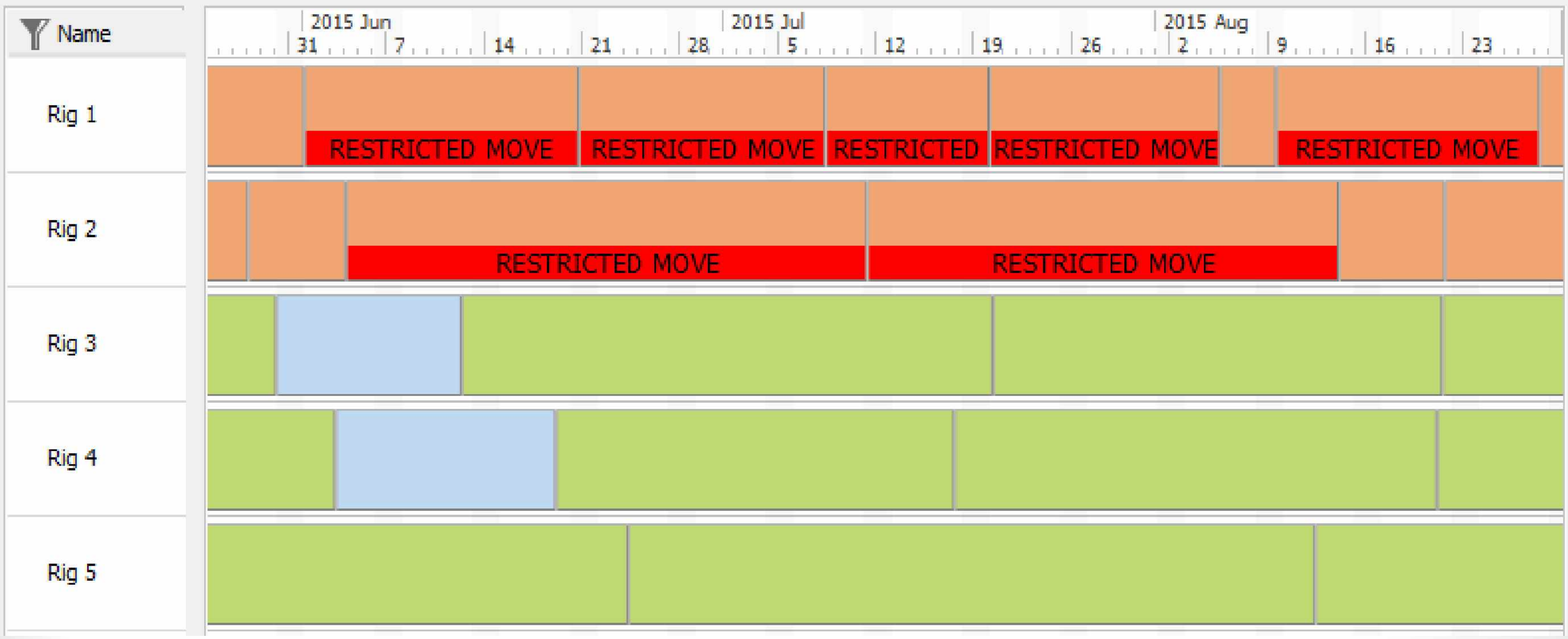
Drilling activities; Work-over activities

Drill Site Optimization



Drilling activities; Work-over activities; Construction activities

Oil Drill Rig Move Optimization



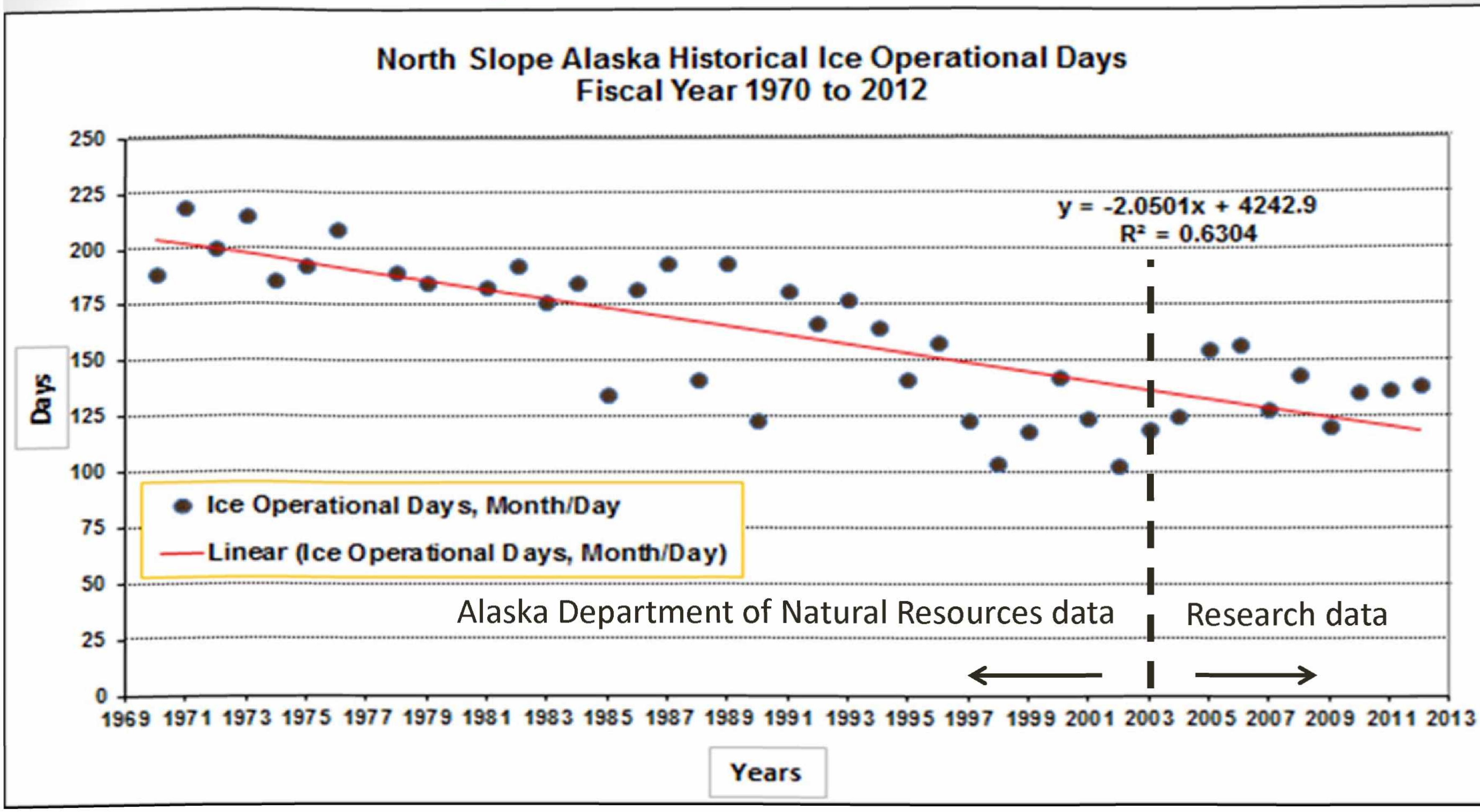
Drilling activities; Work-over activities; Coil tubing activities

Remote Locations/Accessibility

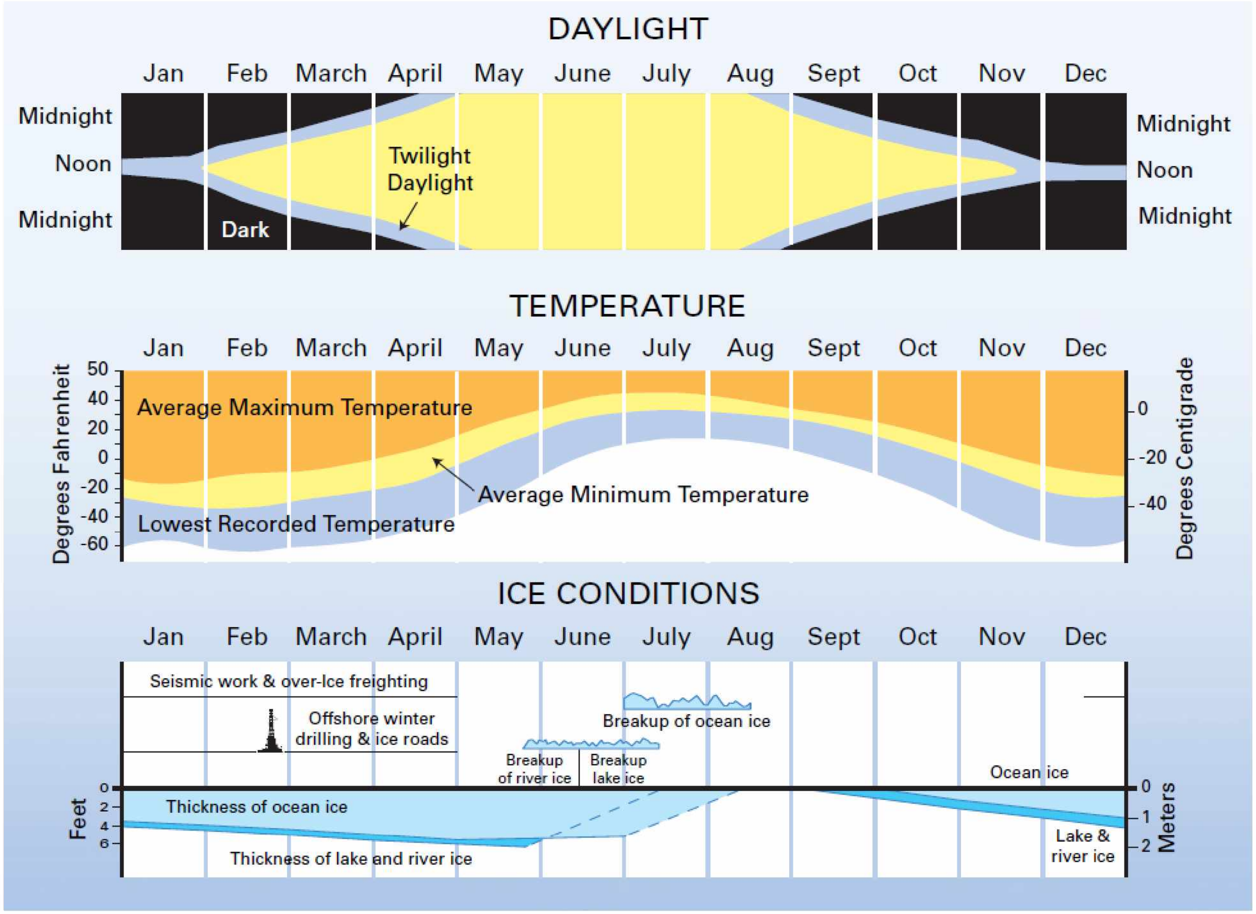
- **Accessibility**
  - Ice Roads
  - Road Conditions
  - Simultaneous Operations

- **Regulatory Permits**
  - Ice road season
  - Barging season

Exploration Season



Challenges



Arctic Energy – For Today and Tomorrow: (BP & COP, 2006)

PM 686B

Research Survey Analysis

Research Survey Data Analysis				
No	Challenges	Responses	Responders	%
1	Simultaneous Operations	5	10	50
2	Weather	4	10	40
3	Resource Competition	4	10	40
4	Labor	4	10	40
5	Equipment	3	10	30
6	Schedule	3	10	30
7	Personnel skills	3	10	30
8	Material	3	10	30
9	Season	2	10	20
10	Funding cycle	2	10	20

Ranked the challenges that project managers encounter while scheduling work activities in Alaska's North Slope

Conclusions

- **Implemented drill rig schedule processes**
  - Drilling process
  - Work-over process
  - Coil Tubing drilling process
- **Implemented the drill rig scheduling tool**
  - Rig optimization tool

Rig Schedule Process

Mid-Range Planning Horizon Steps:

- Identify the well
- Complete schedule Entry punch-list
- Start the Front End Loading process (FEL)
  - Drilling FEL
  - Construction FEL
- Enter well into the rig schedule
- Complete the 90 day Gate review punch-list
  - Punch-list complete: Progress into the 90 day gate
  - Punch-list not complete: Evaluate and reschedule the well

Rig Schedule Process

Short -Range Planning Horizon Steps

- Complete pre rig work
- Complete the 28 day Gate break-in if any
  - Complete punch-list
  - Obtain management approval
  - Implement the change
  - Communicate change

Recommendations

- Invest in rig optimization tools to achieve business goals
- Understand the Stakeholders requirements and needs
- Create simple and easy to read process workflow
- Develop a solid break-in process
- Communicate the changes to users and support teams to avoid potential issues

Acknowledgment

- Michal Luce – Project Sponsor, Integrated Planning Supervisor (ConocoPhillips Alaska)
- LuAnn Piccard, M.S., PMP – Primary Faculty Advisor, Assistant Professor and Department Chair, Engineering Science and Project Management (ESPM), College of Engineering at University of Alaska Anchorage
- Roger Hull, CISSP, CISM, CRISC, PMP - Faculty Advisor (University of Alaska Anchorage)
- Walter Almond, MSPM, PMP - Faculty Advisor (BP Alaska)
- Chris Hunter – Integrated Planning Team (ConocoPhillips Alaska)
- Andrew, Kevin and Edlira Mici - Family members

Questions?

References

- Arctic Energy – For Today and Tomorrow: http://alaska.conocophillips.com/Documents/ArcticEnergy.pdf
- Division of Oil & Gas – 2014 Annual Report: (http://dog.dnr.alaska.gov/publications/documents/annualreports/2014_annual_report.pdf
- Drilling Rig Schedule Optimization: http://gradworks.umi.com/15/33/1533777.html; http://search.proquest.com/docview/1314580515
- Examples of technology at work in the Arctic: (API, 2008) http://www.api.org/~/media/Files/Policy/Exploration/environment/Technology_at_Work_Arctic.pdf
- North Slope Tundra Travel and Ice Road Construction: (ADNR) http://www.housemajority.org/coms/cli/dnr_menefee_schultz.pdf
- Oil and Gas Activity Charts: http://doa.alaska.gov/ogc/ActivityCharts/achtindex.html
- Stakeholder Management umbrella: http://sustainet.com/stakeholder-management/stakeholder-management-umbrella/
- Tundra Model Project: http://dnr.alaska.gov/mlw/tundra/TundraModelReport.pdf)
- https://www.youtube.com/watch?v=T4ELOeh6R6M

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

PROJECT LESSONS LEARNED NARRATIVE

University of Alaska Anchorage
Fall 2015

Lessons Learned

1. Stakeholder Management

Stakeholder management was one of the most important elements for successfully completing this project. It is important that stakeholders be engaged in the process to gain their buy-in and they can have significant influence on decision makers in the groups they represent.

The stakeholder analysis was conducted to determine stakeholder's requirements, their needs, how they measure success. Understanding stakeholder requirements was the key to successfully manage and complete the project.

Peer Review:

Communicate with classmates and teammates regarding the topics, project approach and deliverables. It was important to get feedback from previous students, classmates, advisors and sponsor.

While communicating with classmates and team members that completed the program, found out that requires months for the company to approve the project. Communicated with the sponsor and change the project approach in order to complete the project on time.

While presenting the project to the organizational team, it was recommended to hand out a list with definition. Since the project was too technical, the list of definitions helped the non-oil industry listeners to follow the presentation.

2. Time Management

Critical chain and feeding buffer approach helped on keeping the project on track and submitting quality project deliverables on time. Since the project has multiple checkpoints and deadlines, the feeding buffer approach helped on completing the project deliverables a few days prior to deadline so there is enough time to make corrections and scope changes.

3. Interpreting the material to a non-oil and gas industry reader:

For paper written in technical language, it is important to have someone not familiar with the project review the paper. Initially the material was written in professional language and based on stakeholders feedback, the paper was revised so the non-oil and gas industry readers understand the material.

4. Organize stakeholder meetings/working session's offsite:

If the working sessions are longer than half a day, it is recommended to use offsite meeting facilities. Stakeholders will be more focused and committed to the meetings rather than checking their calendars and thinking about their next meetings.

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

PROJECT KNOWLEDGE AREAS

University of Alaska Anchorage
Fall 2015

Knowledge Areas

1. Project Scope Management

Better understanding of stakeholder's requirements and how they measure success is necessary to maintain the project scope and is the key for project success. However, improving the rig schedule process and recommending best practices is the ultimate goal, so certain changes might be necessary. To manage any required scope changes, they will go through a Change Management Process in accordance with the Project Management Plan and be approved by the project Sponsor.

During research, it was identified that there were three different rig scheduling processes instead of one. As a result, it was agreed that separate workflow diagrams to be created for drilling, work-overs and coil tubing drilling. This change added two more days of work; however it was well managed by core team members.

Two major scope changes were proposed during the execution phase of the project. One of the scope changes were requested to reduce the project scope to avoid company data exposure and the other to conduct a general research not organization oriented. Both scope changes were requested due to a high risk already identified become more critical.

The project Sponsor rejected the first request since some of the data were shared company with partners. The second request was approved understanding that consequences would have been to delay the project for another semester.

Better understanding of organizational processes regarding research paper for external use and the timing allocated to review and approval would had been beneficial. Having a back-up plan to change the research paper orientation is very important in this stage of the project.

In addition to the scope changes requested by the project manager, another scope change on project paper formatting was requested by faculty. Even though a few definitions on the new formation request weren't clear, numerous numbers were added to the project. 50% of the feeding buffer duration spread in two working days was used based on this change. This change was not considered critical and wasn't capture in the change log. The feeding buffer time helped on delivering the project on time and maintaining the schedule performance index.

Since the paper formatting was questionable, it was decided to progress and format the paper based on the UAA instructions. Even though, the project advisors were able to negotiate the formatting with UAA administration, the paper was formatted properly to avoid any last minute changes.

2. Time Management

During the project lifecycle the schedule performance index will be tracked in order to maintain the project baseline and identify schedule delays. The activities on the Critical Path, the risks, and their consequences will be evaluated and their expected durations will be determined.

Feeding and project buffers as part of the critical chain help the project managers to keep the project in track. In order to avoid delays on project deliverables, feeding buffers are created before each PPM milestone. The schedule was crashed and two day feeding buffer were created will finish to finish relationship with each milestone.

100% of the feeding buffer was used for PPM1 and 50% of the buffer was used for PPM#2 (Figure 1. below). The first feeding buffer as used due to software expiration and timing used on training of new software. Half of the second buffer time was used to revise the project management plan due to project scope change.

Even though the time to compete the deliverables two days before the milestones dates are improving, the project activities on the critical path will be monitored and more time should be allocated. Avoid "student syndrome" effect.

96		1.3.5	**PPM #2 - 686B**
97	✓	1.3.5.1	Updated Abstract
98	✓	1.3.5.2	Updated Table of Contents
99	✓	1.3.5.3	Validated research analysis
100	✓	1.3.5.4	Project progress status
101	✓	1.3.5.5	Project Management Plan updates
102	✓	1.3.5.6	Risk response implementation
103	✓	1.3.5.7	Update on Knowledge Areas processes
104	✓	1.3.5.8	Project deliverables status update
105	✓	1.3.5.9	Update Project Schedule
106		1.3.5.10	Feeding Buffer
107	✓	1.3.5.11	Submit PPM#2

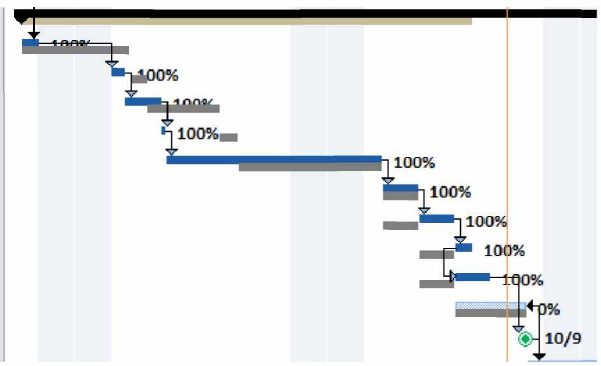


Figure1. Feeding Buffer Approach

Due to unidentified risk on faculty requirements for paper formation, the project paper draft took longer than estimated. As a result 50% of the feeding buffer duration spread in two working days was used. Since this time the project buffer was used only 50% there is definitely improvement on managing time. However, more focus on completing the majority of the work in the first week and adjust the work on the second week approach will followed for next PPM deliverable.

Based on Advisor's feedback, the project conclusion and recommendation was revised within the first day of the feeding buffer. The presentation draft was revised as well.

Due to an identified risk regarding organization changes, one of the project support members was moved to a new position. The project report paper was formatted and completed within 50% of the feeding buffer, it needed to be edited. Mitigated the risk by arranging other sources were used to edit the project paper.

3. Communication Management

Communication management will play an important role in managing the project. Better understanding of Stakeholder Requirement and how they measure success will be a major driver. In order to plan and execute a successful project, it is very important that Stakeholders be engaged.

Meetings are an effective way to communicate the needs with the Stakeholder. Bi-weekly meeting are scheduled with the project Sponsor and primary advisor through the execution phase of this project. Ad hoc meetings are planned with the other faculty advisors. Stakeholder meeting average to date is 92%.

Due to compressed schedule and unavailability of one of the Stakeholders to attend meetings in September, two major scope changes weren't communicated effectively. As a result, it caused delays to get them approved.

Gained communication and the project scope changes were approved avoiding project milestone delays. The scope changes were listed Change Log and in accordance to the Change Management Plan were communicated to the other Stakeholders.

A lesson learned would be to communicate the needs to the project Stakeholders using other tools rather waiting for the next meeting.

The project paper formation change wasn't communicated until a week prior to submitting the paper. A number of the formatting requirement is not well written and are questionable. Communicating with the advisors to making sure the paper formation questions are defined. This project risk was not identified as a risk, adding additional hours to the project. Again, the feeding buffer approach introduced after PPM#1 helped on submitting the project deliverables on time.

Communicating students work progress is important on the quality of the following deliverables. The result of PPM#2 and feedback was not communicated on time and that could have been due to a technical issue. So, another lesson learned is to communicate the needs to advisors and receive feedback as soon as possible and improve the next project deliverable.

Based on the lessons learned from, the communications with the project owner and advisors was improved. Feedback was received on time enabled to make the necessary corrections and submit a better quality of the project deliverables.

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA’s NORTH SLOPE

PROJECT MANAGEMENT PLAN

University of Alaska Anchorage
Fall 2015

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

PROJECT MANAGEMENT PLAN

Project Name:	Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope
Prepared by:	Alket Mici
Date (MM/DD/YYYY):	11/20/2015

Version History	Date (MM/DD/YYYY)	Comments
Version 0.0	04/11/2014	
Version 0.1	09/18/2015	
Version 0.2	10/09/2015	
Version 0.3	11/20/2015	

Table of Contents

Section 1. Business Case

North Slope Alaska has become more attractive for business due to recent changes on Alaska State tax reform. New players are continuing with exploration projects, major operators are announcing lots of new development opportunities and investments.

The recent increase in the number of the projects and activities on the North Slope of Alaska has become challenging, leading to numerous scheduling conflicts for equipment and resources. This project explains steps that can be taken to improve resource allocation and guidelines for scheduling oil drill rig work activities for oil and gas projects on Alaska's North Slope.

Section 2. Scope Management

2.1 Business Need / Opportunity / Objectives

Implementing the guidelines should improve the rig scheduling process; roles and responsibilities will be clearly defined, communication among groups will improve and support groups will have adequate time to complete their work.

This should result in a reduction of rig move downtime and a reduction in the time it takes to produce oil after the rig leaves the well site.

2.2 Product Description (Solution)

This project will produce a research paper that explains the steps that can be taken to improve resource allocation and guidelines for scheduling oil drill rig work activities for oil and gas projects on Alaska's North Slope.

Section 3. Project Description

3.1 Project Scope

The project includes insights from two years of research to improve the oil drill rig scheduling process, a survey of subject matter experts involved in the oil drill rig scheduling process, research of similar Arctic environment projects, and the researchers professional experience identifying and mitigating risks and schedule conflicts in the mid-term planning phase of oil and gas projects.

This project will produce a document that explains the steps that can be taken to improve resource allocation and guidelines for scheduling oil drill rig work activities for oil and gas projects on Alaska's North Slope.

Includes:	Project Management Plan
	Project Research Paper: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope
Excludes:	Political subjects
	Environmental subjects

3.2 Assumptions.

Research papers and data are available to conduct analyses.

Industry experts are available and supportive to provide information and feedback.

3.3 Work Breakdown Structure

(Appendix A) WBS Chart

3.4 Project Approach

The project includes insights from two years of research to improve the oil drill rig scheduling process, a survey of subject matter experts involved in the oil drill rig scheduling process, research of similar Arctic environment projects, and the researchers professional experience identifying and mitigating risks and schedule conflicts in the mid-term planning phase of oil and gas projects.

Prior to starting the project, the project manager attended a workshop to better organize and facilitate meetings, identifying tools and techniques for collaboration. This workshop identified tools and techniques that were the most appropriate and efficient for capturing the current process work flow, issues, conflicts, and areas for improvement

After identifying the stakeholders, their representatives and their involvement in the rig scheduling process, conducted a rig scheduling gap analysis in the form of a workshop involving representatives from the Development group, Drilling, Wells, Explorations and Operations. The objectives of the workshop were to identify stakeholder requirements, their needs and how they measure success in order to improve rig schedule process. The next step was to assign the core team members that would determine how to resolve the previously identified issues, develop and document an improved rig scheduling process.

Also, in order to identify challenges, risks and constraints that project managers face while scheduling work activities, a survey was sent out to representatives of one of the new operators to the North Slope. The result of the survey will be used to identify and prioritize their most significant challenges.

The next step will be conducting web research on other papers and articles for rig scheduling in an arctic environment, searching local and federal agency requirements for planning and executing projects on the North Slope, and developing a recommended rig scheduling process based on self-professional experience in remote projects working for different organizations and new players to the Arctic.

The project manager will draft and complete the project management plan and deliverables, identify stakeholder requirement, and obtain approvals in order to improve the process workflow. The project manager will submit the project deliverables to the core team members, advisors and Subject Matter Experts for review and feedback. The project progress will be presented to the team members and advisors once every two weeks until the deliverables are produced and accepted.

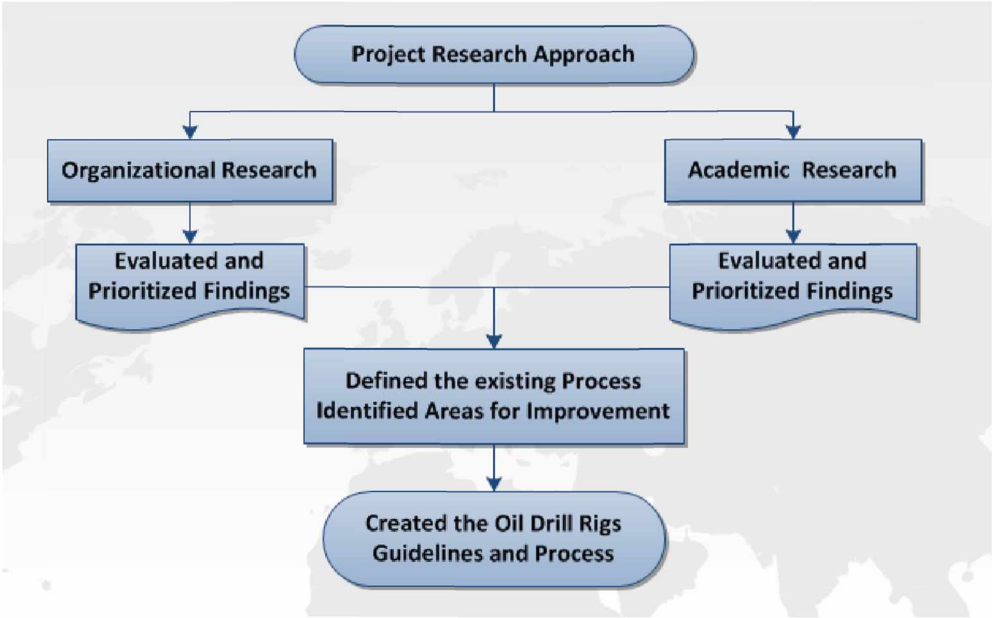


Figure 1 - Project Research Approach Diagram

Section 4. Schedule Management

4.1 Milestones

Milestone/Deliverable 686A	Target Date
Project Start	01/17/2014
Session I - Course Overview and Project Objectives	01/17/2014
PMP #1 Deliverables Submitted	01/31/2014
Session II - Research and Product Planning Methodology	02/07/2014
PMP #2 Deliverables Submitted	02/21/2014
Session III - Project Management Plan	02/28/2014
PMP #3 Deliverables Submitted	03/14/2014
Session IV – Lessons Learned Workshop	03/21/2014
UAA IRB Submittal Complete	03/28/2014
Session V - Research Analyses	03/28/2014
PMP #4 Deliverables Submitted	04/11/2014

Final Presentation and Deliverables Submitted	04/21/2014
Final Oral Defenses	04/21/2014
Final Deliverables Submitted	04/28/2014
Leadership and Contribution to Learning of Others	04/28/2014
Milestone/Deliverable 686B	**Target Date**
Project Start	09/04/2015
Session I – Monitoring and Controlling Project	09/04/2015
PMP #1 Deliverables Submitted	09/18/2015
Session II – Interpretation Research Results	09/25/2015
PMP #2 Deliverables Submitted	10/09/2015
GO/NO-GO - 686B Decision Checkpoint	10/15/2015
Session III - Technical Writing and Formatting	10/23/2015
Session IV - Writing, Presentation & Lesson's Learned	10/30/2015
PMP #3 Deliverables Submitted	11/06/2015
GO/NO-GO - 686B Decision Checkpoint	11/11/2015
Session V - Great Presentations	11/13/2015
PMP #4 Deliverables Submitted	11/20/2015
FINAL GO/NO-GO - 686B Decision Checkpoint	11/25/2015
Final Presentation and Deliverables Submitted	11/27/2015
Final Oral Defenses	12/01/2015
Project Closing	11/30/2015
Final Deliverables Submitted	12/08/2015

4.2 Project Schedule

(Appendix B) Project Schedule

Section 5. Communications Management

5.1 Communications Matrix

The following strategies have been established to promote effective communication within and about this project:

The Project Manager presents the project status to the project core team members bi-weekly. Meetings will be established at the project manager's preference as issues or change control items arise.

The Project Sponsor will be notified via e-mail on all issues. Issue notification will include time constraints, and impacts, which will identify the urgency of the request for service.

The project core team will have bi-weekly update / status meetings to review completed tasks and determine current work priorities.

The project manager will provide the project sponsor with project team minutes and faculty steering committee status reports.

A project collaborate web site will be established on the University of Alaska Anchorage Blackboard and organization share drive in order to provide access to the project documentation by project members.

5.2 Roles and Responsibilities

Stakeholder Roles

The following role definitions are being applied to the resources assigned to this project:

Project Sponsor	Provides executive team approval and sponsorship for the project. Has budget ownership for the project and he is the major stakeholder and recipient for the project deliverables. Provides policy definition to the Project team. Resolves all policy issues with the appropriate policy owners in order to provide a clear, decisive definition. Makes final decisions and resolves conflicts or issues regarding project expectations across organizational and functional areas. The project sponsor and the project manager have a direct link for all communication.
Project Manager	Provides overall management to the project. Accountable for establishing a Project Charter, developing and managing the Project Management Plan, securing appropriate resources and delegating the work and insuring successful completion of the project. Interfaces with project sponsor, core team members and faculty committee members and has overall accountability for the project.
Faculty Committee Members	Provide assistance in resolving issues through the project planning and execution phase. Review and monitor project progress and provide necessary tools and support when milestones are in jeopardy.
Stakeholder	Key provider of requirements and recipient of project deliverable and associated benefits. Deliverable will directly enhance the stakeholders' business processes and environment.
Core Team Member	Representatives of each individual group including Drilling, Development, Rig Work-over, Operations, integrated Operations. Review project progress, analyzes, designs and ultimately improves or replaces the business processes. This includes collaborating with teams to develop high level process designs and models, understanding best practices for business processes and partnering with team members to identify appropriate opportunities, challenging the old rules of the business and stimulating creating thinking, and identifying organizational impact areas.

Project Stakeholders

Name	Role	Responsibility
M. Luce	Project Sponsor	Approve Project Charter Attend scheduled meetings Review Project Deliverables Provide Feedback and Recommendation
A. Mici	Project Manager	Schedule Meetings with Stakeholders Conduct Research Analyze research Results Complete and Submit Project Deliverables
L. Piccard	Faculty Advisor	Attend scheduled meetings Review Project Deliverables Provide Feedback and Recommendation
R. Hull / W. Almon	Faculty Committee Member	Attend scheduled meetings Review Project Deliverables Provide Feedback and Recommendation
Integrated Planning Representative	Integrated Operations	Schedule / Facilitate Core Team meetings and represent Integrated Operations interests Review Project Deliverables Provide Feedback and Recommendation
Drilling Representative	Core Team Member	Attend project meetings and represent drilling and CTD drilling interests Provide Feedback and Recommendation
Reservoir Development Representative	Core Team Member	Attend project meetings and represent Development interests Provide Feedback and Recommendation
Work-over Representative	Core Team Member	Attend project meetings and represent Work-Over interests Provide Feedback and Recommendation
Operations Representative	Core Team Member	Attend project meetings and represent Operations Interests Provide Feedback and Recommendation

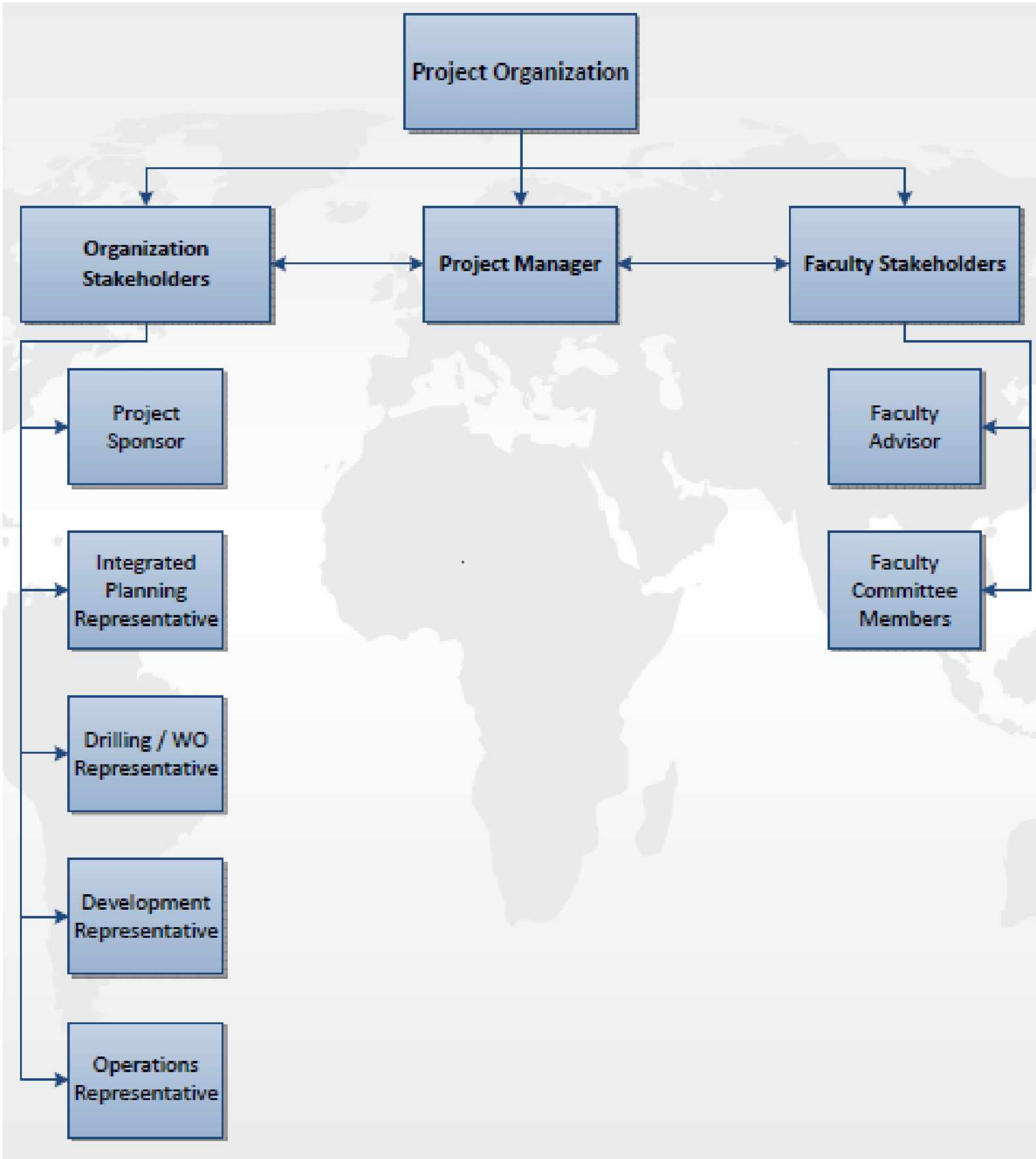


Figure 2 - Project Organization Chart

5.3 Stakeholder Requirements

(Appendix C) Stakeholder Requirement

(Appendix D) Requirement Traceability Matrix

Section 6. Risk Management

6.1 Risk Management Approach

Project Risks will be reviewed regularly throughout the project life cycle:

- Monitoring and reviewing the risk management plan will be part of the routine project control.
- The Project manager will review the risk plan after a risk occurs to reevaluate the probability and impact of the remaining risk events.
- The risk will be evaluated and documented after each project scope or schedule changes events and any increased risk exposure will be communicated to Stakeholders

The Risk Log provides a means to qualify and quantify risks, allowing prioritization of identified project risks according to probability and impact. It serves as a central reference of risks that have been identified, addressed, and closed across the life of the project. The Project Manager will be responsible for updating the Risk Log throughout the project with the inclusion of new risks, the reassessment of existing risk probability/impact and the closing of risks that no longer apply.

Mitigation strategies and contingency plans act as a response to identified risks and are developed for those risks which have a high probability of occurring and significant impact on the project performance. Risk Mitigation activities seek to reduce the probability and/or impact of a risk to below an acceptable threshold. Contingency Planning refers to the development of a management plan that identifies alternative strategies to be used to ensure project success if the specified risk event occurs. The Mitigation strategies and contingency plans will be reviewed on a regular basis and the document will be updated as circumstances change or new information, which affects the impact of the risk event on the project, is obtained.

6.2. Risk Assessment

Risk Log

Risk ID	Risk Statement	WBS ID	Probability	Probability Impact					
				Scope	Quality	Schedule	Initiating	Planning	Executing
1	Project Manager Busy Schedule and unplanned Travel time will cause schedule delays	1.3	0.2	n/a	Low	Low	Med	Med	Low
2	Project Manager or Family Member get sick will cause project deliverables not submitted on time and low quality	1.3	0.2	n/a	Low	Low	High	High	Low
3	Core Team Members do not read pre-read materials and are not prepare for the meeting and cause schedule delays	1.5	0.1	Med	Low	Low	High	High	n/a
4	Core Team members representing their Group do not attend meetings causing other Groups to making decision that might affect how they measure success. This will cause scope changes and project delays	1.5	0.1	Low	Low	Med	Med	Med	n/a

5	Company Strategy for Rig scheduling Process not for external use will require to find other material sources and be generic in project deliverables will cause scope change and schedule delays	1.3.1.4	0.3	High	Med	High	Low	Med	Med
6	Lack of research papers, materials and documents for rig scheduling process in the North Slope will cause scope changes and project delays	1.3.3.5	0.3	Med	Med	Low	High	High	Med
7	Stakeholders do not provide feedback on time will cause to schedule delays and cope change	1.3.3 1.3.5 1.3.8 1.3.11	0.3	Med	Med	Med	High	High	Med
8	Survey answers not received on time will cause rework the analyses and delay the schedule	1.3.5.3	0.1	Low	Med	Med	Med	Med	n/a

9	Faculty requirement project material and deliverables not detailed will impact the quality of the PPM submittals and cause schedule delays	1.1	0.1	Low	Low	Med	Low	High	n/a
10	Interview research data does not address the research questions and cause scope change and delays	1.3.5.3	0.1	Low	Med	Med	Med	Med	Med
11	IRB not approved will cause project delays and scope change	1.1.9.2	0.2	n/a	na	n/a	High	n/a	Closed
12	Legal Department delays approval causing schedule delays (Scope change)	n/a	0.5	High	Low	High	n/a	n/a	Closed
13	Data will be available to Analyze	1.3.5.3	0.7	n/a	High	High	n/a	n/a	High
14	Software and tool are available	1.3.5.3	0.7	n/a	High	High	n/a	n/a	High
15	Company Org Changes, causing schedule approval delays and unable to access the data	1.3.3, 1.3.5 1.3.7 1.3.12	0.5	High	Med	High	n/a	n/a	Med

16	No-Go decision will cause Project delays and rework the scope of the Project	1.3.6, 1.3.10	0.2	Med	Low	High	Low	Low	Low

Legend:

Positive Risk	
Negative Risk	
Current Probability and Phase	

6.3. Risk Management

The project risks are identified and associated mitigation actions are monitored and controlled in accordance with the Risk Management Plan

Risk Register

Risk ID	Risk Statement	Probability	Impact			Risk Mitigation
			Scope	Quality	Schedule	
01	Project Manager Busy Schedule and unplanned Travel time will cause schedule delays	02	n/a	Low	Low	Prepare the work ahead of time. Use Contingency Buffers. Use vacation time to keep up with the schedule.
02	Project Manager or Family Member get sick will cause project deliverables not submitted on time and low quality	02	n/a	Low	Low	Complete the deliverables on time and use contingency time if the risk occurs.
03	Core Team Members do not read pre-read materials and are not prepare for the meeting and cause schedule delays	0.1	Med	Low	Low	Set up meeting sessions with core team members in order to get review the project documents and receive feedback

04	Core Team members representing their Group do not attend meetings causing other Groups to making decision that might affect how they measure success. This will cause scope changes and project delays	0.1	Low	Low	Med	Cancel working sessions if one of the groups will not be represented.
05	Company Strategy for Rig scheduling Process not for external use will require to find other material sources and be generic in project deliverables will cause scope change and schedule delays	0.3	Med	High	High	Do not expose any company material, data and documentation. Use research data rather than actual data.
06	Lack of research papers, materials and documents for rig scheduling process in the North Slope will cause scope changes and project delays	0.3	Med	Med	Med	This is one of the kind project and there are not adequate research material in library or online. Research Oil & Gas Agency Web Sites for more information
07	Stakeholders do not provide feedback on time will cause to schedule delays and cope change	0.3	Med	Med	Med	Ask the Stakeholders for feedback and schedule meetings in regular basis to answer question
08	Survey answers not received on time will cause rework the analyses and delay the schedule	0.1	Low	Med	Med	Send as much surveys as possible and request feedback
09	Faculty requirement project material and deliverables not detailed will impact the quality of the PPM submittals and cause schedule delays	0.1	Low	Low	Med	Communicate with Advisor & Committee member to be clear of the requirements

10	Interview research data does not address the research questions and cause scope change and delays	0.1	Low	Med	Med	Interview Oil & Gas industry experts. Analyzing actual data will expose the risk identified in ID #12.
11	IRB not approved will cause project delays and scope change	0.0	n/a	n/a	n/a	Received the IBA
12	Legal Department delays approval causing schedule delays (Scope Change)	0.5	High	Low	High	Reduce the scope of the project will decrease the risk and avoid schedule delays
13	Data will be available to Analyze	0.7	n/a	High	High	It will improve the Quality of the project and reduce time to analyze the data
14	Software and tool are available	0.7	n/a	High	High	It will improve the Quality of the project and reduce time to analyze the data
15	Company Org Changes, causing schedule approval delays and unable to access the data	0.5	High	Med	High	Allocate time to analyze the data ASAP
16	No-Go decision will cause Project delays and rework the scope of the Project	0.2	Med	Low	High	Prepare PMP and Communicate with Advisor

Section 7. Issue Management

7.1 Issue Management

Project-related issues will be tracked, prioritized, assigned, resolved, and communicated in accordance with the Project Management Procedures:

Issue descriptions, owners, resolution and status will be maintained on an issues log in a standard format.

Issues will be addressed with the project core team and advisors and communicated in the project status report.

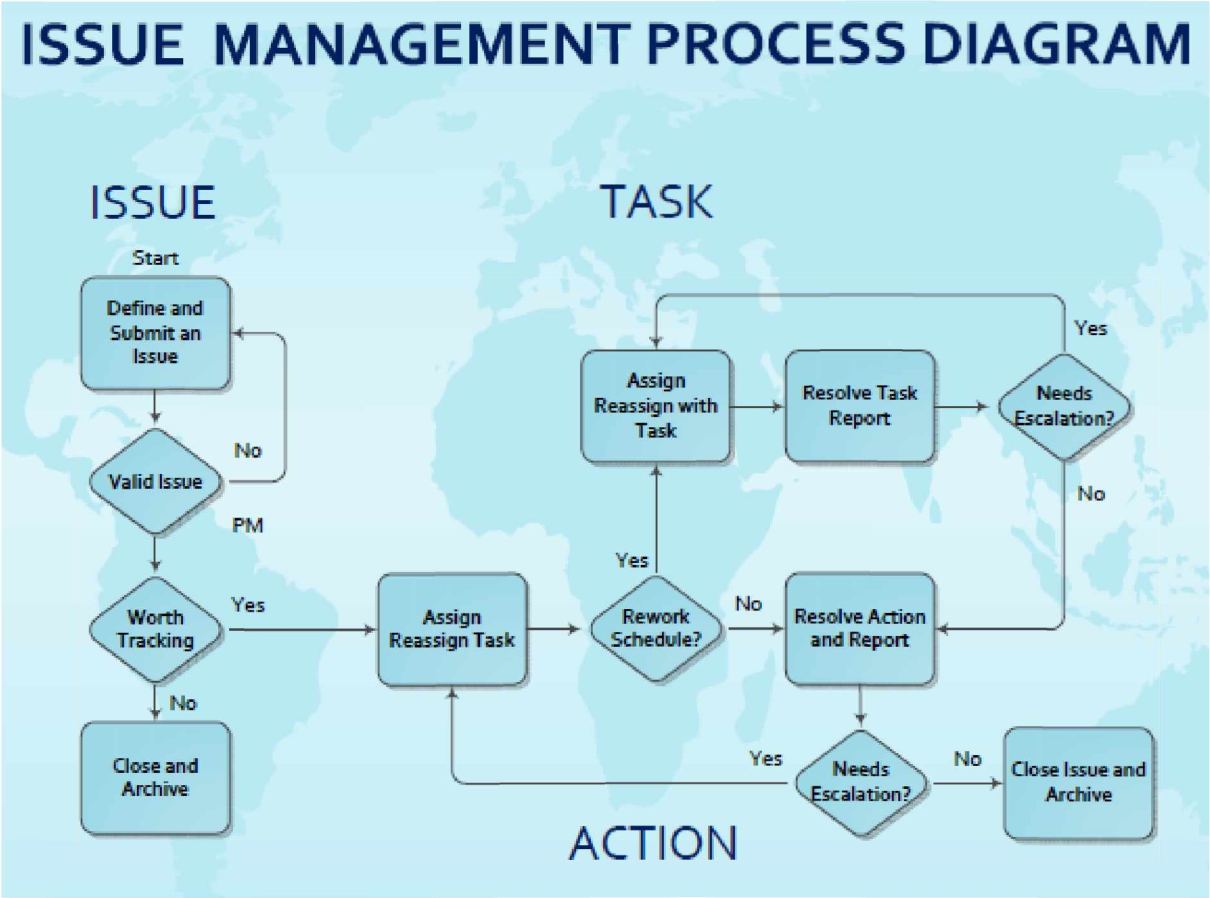


Figure 3 - Issue Management Process Diagram

Section 8. Change Control Process (Change Management Plan)

8.1. Purpose of the Change Management Plan

The Change Management Plan documents and tracks the necessary information required to effectively manage project change from project baseline to delivery within the constraints of PM686 Capstone project requirements and expectations. The Change Management Plan is created during the Executing phase of the project and it is created to guide the Project Manager, who will reference the plan when the changes are requested and/or required to justify the change request response.

8.2. Change management Process

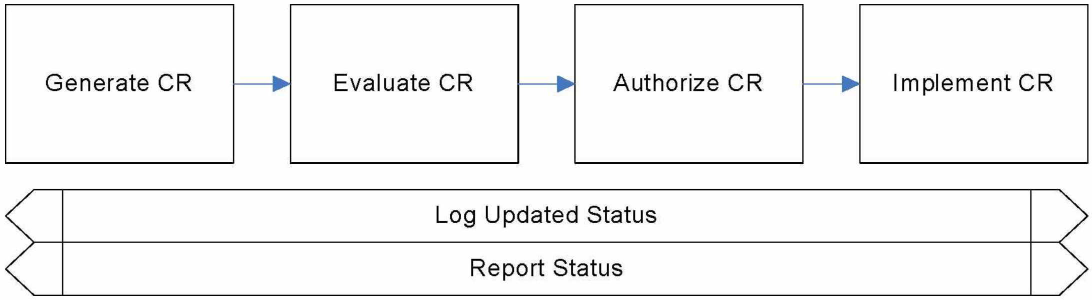
The Change Management process establishes an orderly and effective procedure for tracking the submission, coordination, review, evaluation, categorization, and approval for release of all changes to the project's baselines.

Any proposed changes to the project scope or deliverables must be submitted to the Project Manager in writing. The Project Manager will evaluate the impact on the project scope, schedule, and budget and involve the rest of the Change Control Personnel described below.

The project will follow the process outlined below to manage changes to the project scope, schedule and quality. This change control plan may be executed to change the approved charter during project planning or to change the approved project plan during project execution.

8.2.1. Change Request Process Flow Requirements

Step	Description
Generate Change Request	A submitter communicates to the Project manager a change request in a written form.
Log Change Request Status	The Change Manager enters the Change requests into the Change Log. The Change Request status is updated throughout the Change requests and Change Management Log process as needed.
Evaluate Change Request	Project personnel review the Change Request and provide an estimated level of effort to process, and develop a proposed solution for the suggested change
Authorize Change Request	Approval to move forward with incorporating the suggested change into the project/product
Implement Change Request	If the change request is approved, the necessary adjustments will be made and documented in the Change Management log. Project status will be communicated to the submitter and other stakeholders. Project will re-baselined after the Change Request is approved and implemented.



8.2. Change Request Form and Change Management Log

(Appendix E) Change Log

(Appendix F) Change Request Form

8.3. Evaluating and Authorizing Change Requests

Change requests are evaluated using the following priority criteria:

Priority	Comments	Description
Critical:	Issued by Project Sponsors, Academic advisory committee	Change request will stop project progress if not resolved.
High:	High Impact risk Identified	Change request will likely move the project back in terms of budget or timeline, or will materially affect quality or scope.
Medium:	Identified by the Project Manager	Change request will have material effect on project, has potential to be moved to high category and/or requires significant resources to manage.
Low:	Issued by the project stakeholders	Change request is expected to have a moderate effect on the project, but will require resources to address.

Change requests are evaluated and assigned one or more of the following change types:

Type	Description
Scope	Change affecting scope
Time	Change affecting time
Duration	Change affecting duration
Cost	Change affecting cost
Resources	Change affecting resources
Deliverables	Change affecting deliverables
Product	Change affecting product
Processes	Change affecting process
Quality	Change affecting quality

Change requests are evaluated and assigned one of the following status types:

Status	Description
Open	Entered/Open but not yet approved or assigned
Work in Progress	Change request approved, assigned, and work is progressing
In Review	Change request work is completed and in final review.
Closed	Change request work is complete, and updates have been released.

8.3.1. Change Control Personnel Responsibilities

The Change Personnel Authority is the approval authority for all proposed change requests applicable to this Project. The project manager and the project sponsor have the authority to approve all low, medium, and high priority change requests. The project Advisor will review the Change Management Process and make sure the approval steps are followed.

As change requests are submitted to the Project Manager by the project stakeholders, the Project Manager will log the requests in the change log. Project manager is responsible to review the change requests and evaluate the impact on the project scope, schedule and budget. In the event more information is needed for a particular change request, the request will be deferred and sent back to the requestor for more information or clarification. If a change is considered critical, an ad hoc stakeholder meeting can be called in order to review the change prior to the next scheduled meeting. Once the changes are approved, the Project Manager whose area of responsibility and role is affected by the change will be responsible for making documentation revisions/edits as necessary for all approved changes.

Role	Name	Contact	Description
Project Manager	Alket Mici	907 227 4046	Submit change requests on standard change request forms. Provide all applicable information and detail on change request forms. Be prepared to address questions regarding any submitted change requests. Provide feedback as necessary on impact of proposed changes
Project Sponsor	Michael Luce	907 265 6025	Approve all changes to schedule/ cost baseline if changes impact the project schedule. Seek clarification from change requestors on any open issues or concerns.
Project Advisor	LuAnn Picard	907 786 1917	Review the Change Management Process and assure the Project Change Management procedures are followed.

Section 9. Approval Authority

Project Management Approval Form

Project Name: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope

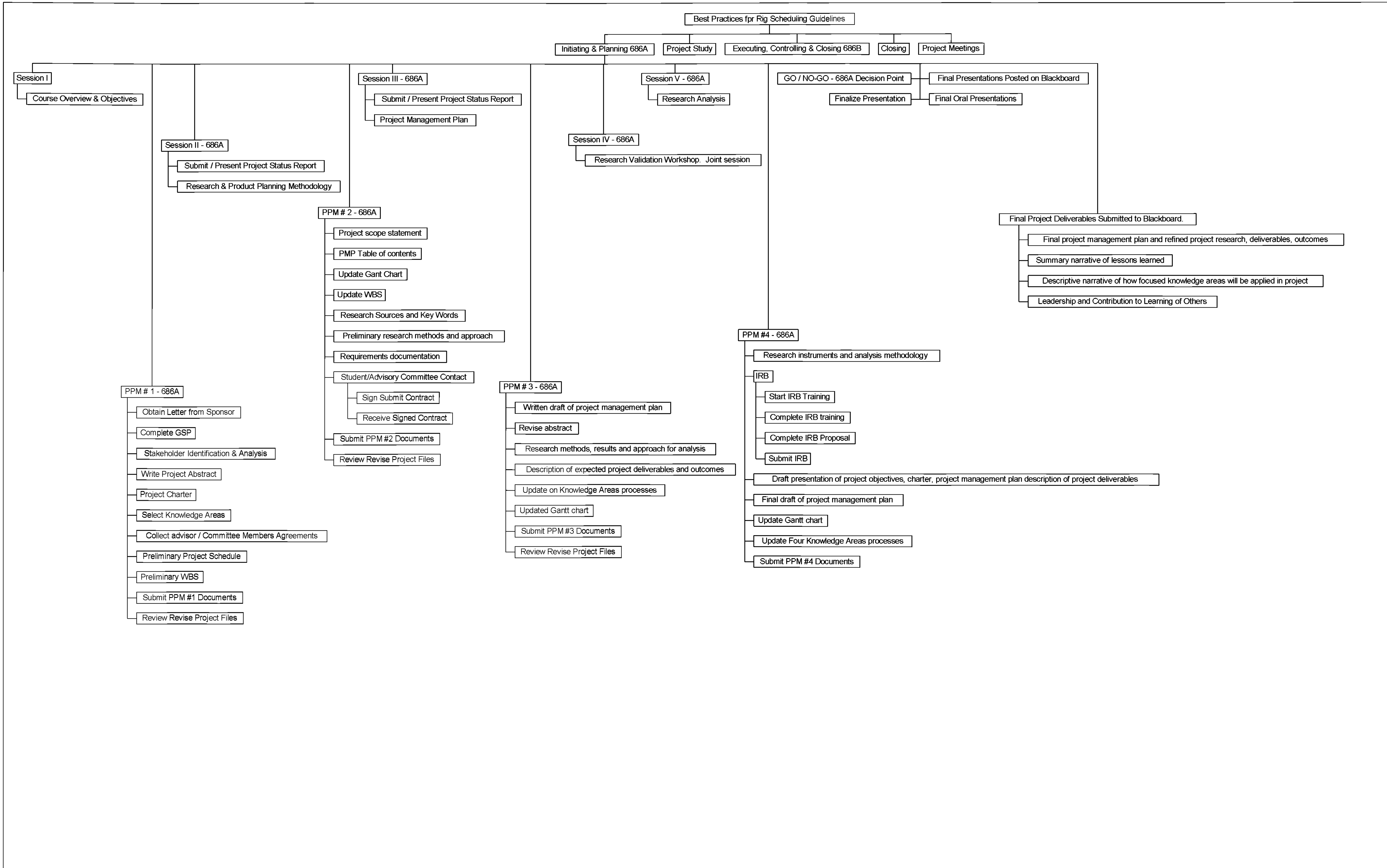
Project Manager: Alket Mici

I have reviewed the information contained in this Project Management Plan and agree

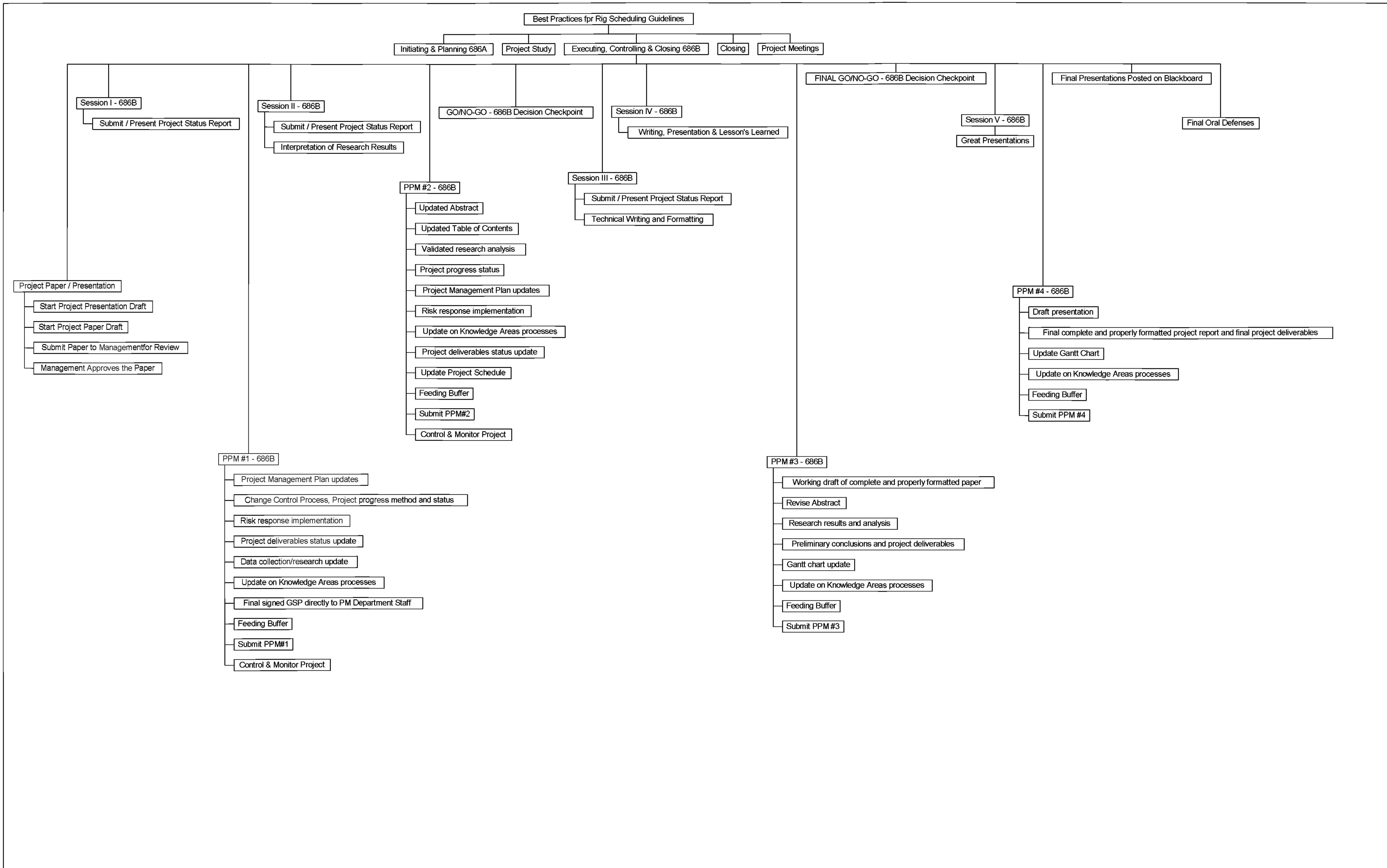
Approver Name	Title	Signature	Date
Michael L.	Project Sponsor		11/20/2015

Section 10. Appendixes

Appendix A - WBS Chart



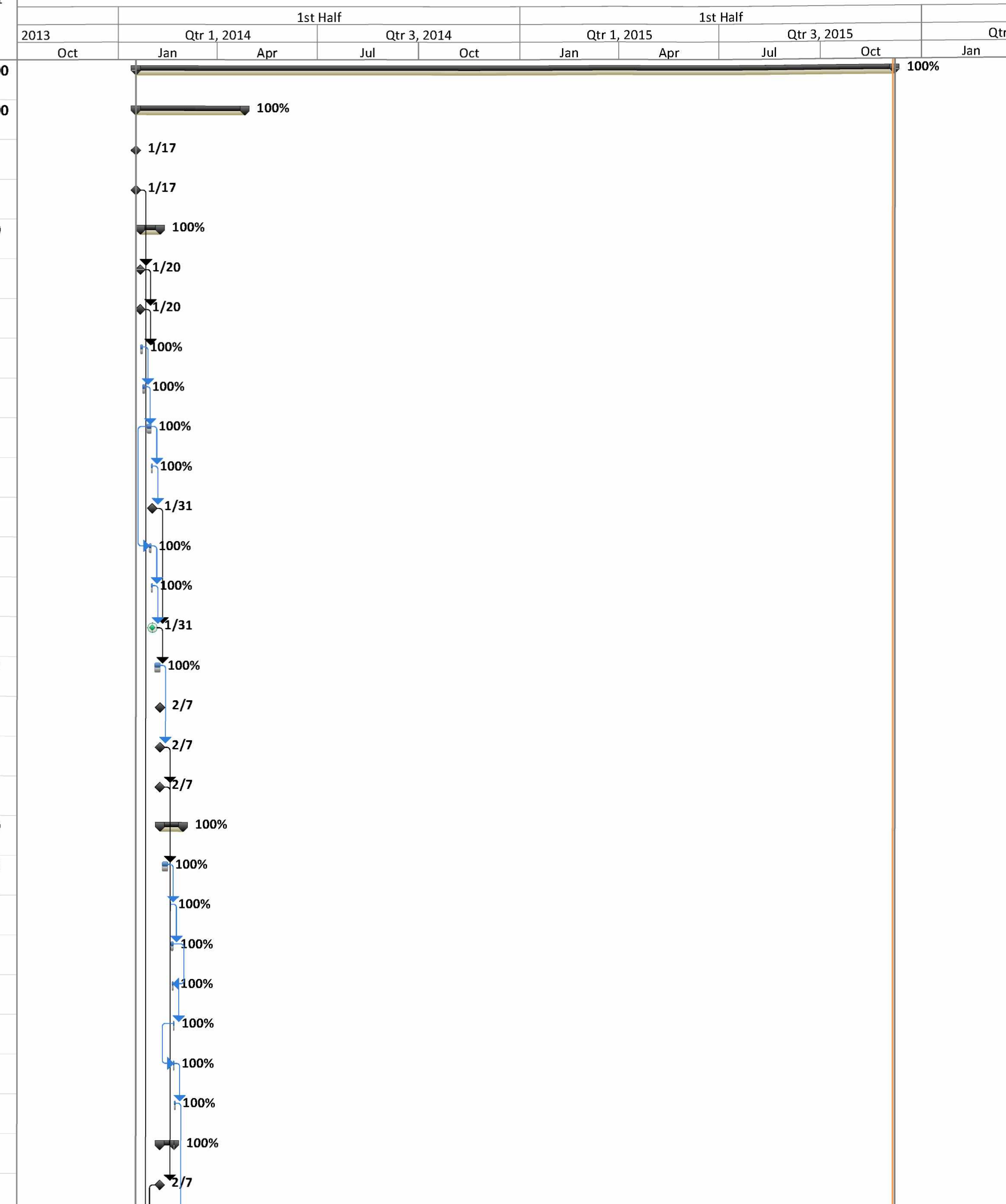
Best Practices fpr Rig Scheduling Guidelines
Initiating & Planning 686A
Project Study
Executing, Controlling & Closing 686B
Closing
Project Meetings
Session I
Course Overview & Objectives
Session II - 686A
Submit / Present Project Status Report
Research & Product Planning Methodology
Session III - 686A
Submit / Present Project Status Report
Project Management Plan
Session IV - 686A
Research Validation Workshop. Joint session
Session V - 686A
Research Analysis
GO / NO-GO - 686A Decision Point
Final Presentations Posted on Blackboard
Finalize Presentation
Final Oral Presentations
PPM # 1 - 686A
Obtain Letter from Sponsor
Complete GSP
Stakeholder Identification & Analysis
Write Project Abstract
Project Charter
Select Knowledge Areas
Collect advisor / Committee Members Agreements
Preliminary Project Schedule
Preliminary WBS
Submit PPM #1 Documents
Review Revise Project Files
PPM # 2 - 686A
Project scope statement
PMP Table of contents
Update Gant Chart
Update WBS
Research Sources and Key Words
Preliminary research methods and approach
Requirements documentation
Student/Advisory Committee Contact
Sign Submit Contract
Receive Signed Contract
Submit PPM #2 Documents
Review Revise Project Files
PPM # 3 - 686A
Written draft of project management plan
Revise abstract
Research methods, results and approach for analysis
Description of expected project deliverables and outcomes
Update on Knowledge Areas processes
Updated Gantt chart
Submit PPM #3 Documents
Review Revise Project Files
PPM #4 - 686A
Research instruments and analysis methodology
IRB
Start IRB Training
Complete IRB training
Complete IRB Proposal
Submit IRB
Draft presentation of project objectives, charter, project management plan description of project deliverables
Final draft of project management plan
Update Gantt chart
Update Four Knowledge Areas processes
Submit PPM #4 Documents
Final Project Deliverables Submitted to Blackboard.
Final project management plan and refined project research, deliverables, outcomes
Summary narrative of lessons learned
Descriptive narrative of how focused knowledge areas will be applied in project
Leadership and Contribution to Learning of Others



Best Practices fpr Rig Scheduling Guidelines
Initiating & Planning 686A
Project Study
Executing, Controlling & Closing 686B
Closing
Project Meetings
Session I - 686B
Submit / Present Project Status Report
Project Paper / Presentation
Start Project Presentation Draft
Start Project Paper Draft
Submit Paper to Managementfor Review
Management Approves the Paper
Session II - 686B
Submit / Present Project Status Report
Interpretation of Research Results
PPM #1 - 686B
Project Management Plan updates
Change Control Process, Project progress method and status
Risk response implementation
Project deliverables status update
Data collection/research update
Update on Knowledge Areas processes
Final signed GSP directly to PM Department Staff
Feeding Buffer
Submit PPM#1
Control & Monitor Project
PPM #2 - 686B
Updated Abstract
Updated Table of Contents
Validated research analysis
Project progress status
Project Management Plan updates
Risk response implementation
Update on Knowledge Areas processes
Project deliverables status update
Update Project Schedule
Feeding Buffer
Submit PPM#2
Control & Monitor Project
GO/NO-GO - 686B Decision Checkpoint
Session III - 686B
Submit / Present Project Status Report
Technical Writing and Formatting
Session IV - 686B
Writing, Presentation & Lesson's Learned
FINAL GO/NO-GO - 686B Decision Checkpoint
PPM #3 - 686B
Working draft of complete and properly formatted paper
Revise Abstract
Research results and analysis
Preliminary conclusions and project deliverables
Gantt chart update
Update on Knowledge Areas processes
Feeding Buffer
Submit PPM #3
Session V - 686B
Great Presentations
Final Presentations Posted on Blackboard
PPM #4 - 686B
Draft presentation
Final complete and properly formatted project report and final project deliverables
Update Gantt Chart
Update on Knowledge Areas processes
Feeding Buffer
Submit PPM #4
Final Oral Defenses

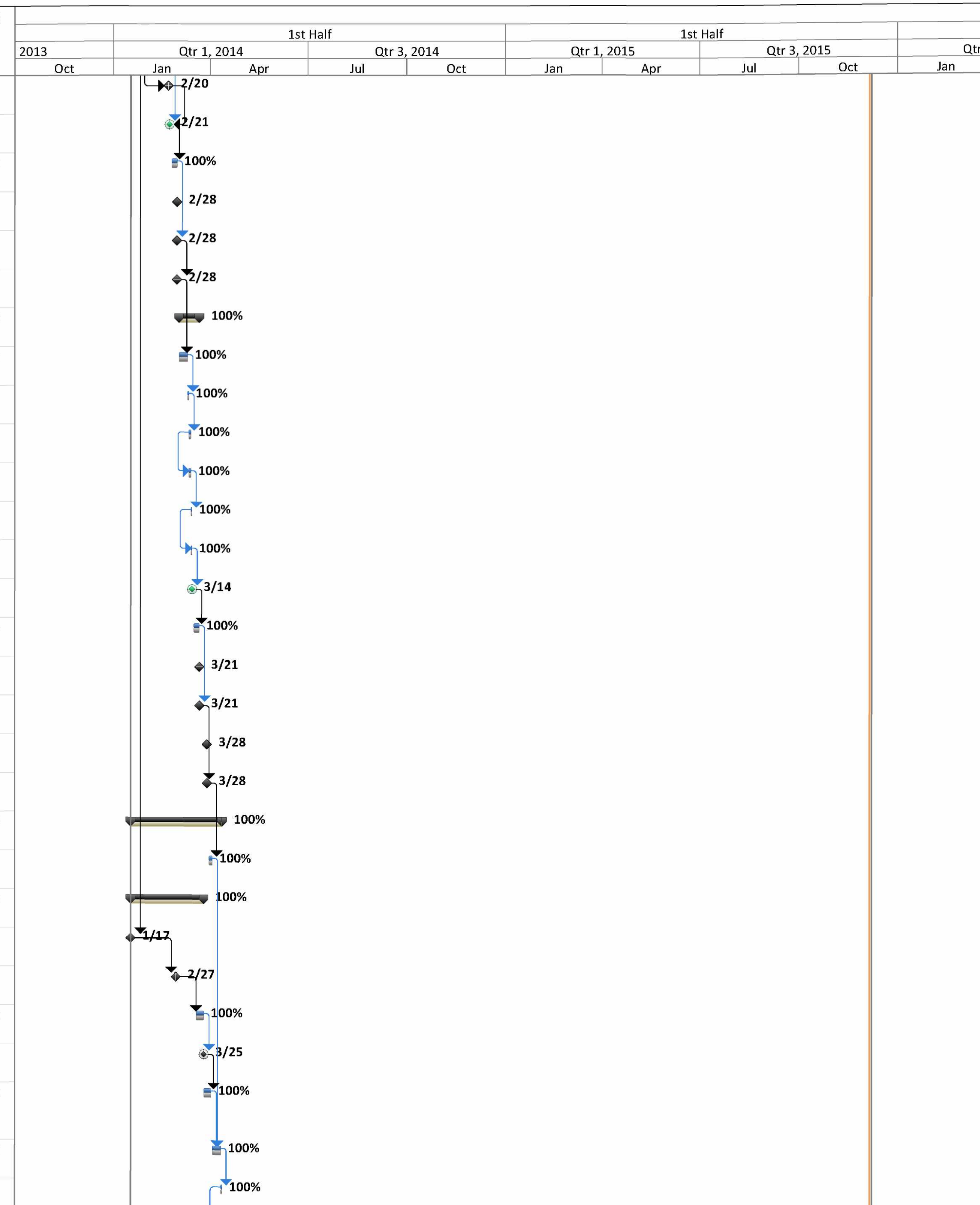
Appendix B - Project Schedule

ID		WBS	Task Name	Duration	Start	Finish	SPI	CPI	% Comple	Baseline Cost	Actual Cost
1	✓	**1**	**686A & 686B Project Schedule**	**491.5days**	**Fri 1/17/14**	**Mon 12/7/15**	**1**	**1.06**	**100%**	**$30,828.00**	**$28,740.00**
2	✓	**1.1**	**Initiating & Planning 686A**	**71days**	**Fri 1/17/14**	**Fri 4/25/14**	**1**	**1**	**100%**	**$18,720.00**	**$18,720.00**
3	✓	**1.1.1**	**Session I**	**0days**	**Fri 1/17/14**	**Fri 1/17/14**	**0**	**0**	**100%**	**$0.00**	**$0.00**
4	✓	1.1.1.1	Course Overview & Objectives	0days	Fri 1/17/14	Fri 1/17/14	0	0	100%	$0.00	$0.00
5	✓	**1.1.2**	**PPM # 1 - 686A**	**14days**	**Mon 1/20/14**	**Fri 2/7/14**	**1**	**1**	**100%**	**$4,080.00**	**$4,080.00**
6	✓	1.1.2.1	Obtain Letter from Sponsor	0days	Mon 1/20/14	Mon 1/20/14	0	0	100%	$0.00	$0.00
7	✓	1.1.2.2	Complete GSP	0days	Mon 1/20/14	Mon 1/20/14	0	0	100%	$0.00	$0.00
8	✓	1.1.2.3	Stakeholder Identification & Analysis	2days	Tue 1/21/14	Wed 1/22/14	1	1	100%	$480.00	$480.00
9	✓	1.1.2.4	Write Project Abstract	2days	Thu 1/23/14	Fri 1/24/14	1	1	100%	$480.00	$480.00
10	✓	1.1.2.5	Project Charter	4days	Mon 1/27/14	Thu 1/30/14	1	1	100%	$960.00	$960.00
11	✓	1.1.2.6	Select Knowledge Areas	1day	Fri 1/31/14	Fri 1/31/14	1	1	100%	$240.00	$240.00
12	✓	1.1.2.7	Collect advisor / Committee Members Agreements	0days	Fri 1/31/14	Fri 1/31/14	0	0	100%	$0.00	$0.00
13	✓	1.1.2.8	Preliminary Project Schedule	2days	Wed 1/29/14	Thu 1/30/14	1	1	100%	$480.00	$480.00
14	✓	1.1.2.9	Preliminary WBS	1day	Fri 1/31/14	Fri 1/31/14	1	1	100%	$240.00	$240.00
15	✓	1.1.2.10	Submit PPM #1 Documents	0days	Fri 1/31/14	Fri 1/31/14	0	0	100%	$0.00	$0.00
16	✓	1.1.2.11	Review Revise Project Files	5days	Mon 2/3/14	Fri 2/7/14	1	1	100%	$1,200.00	$1,200.00
17	✓	**1.1.3**	**Session II - 686A**	**0days**	**Fri 2/7/14**	**Fri 2/7/14**	**0**	**0**	**100%**	**$0.00**	**$0.00**
18	✓	1.1.3.1	Submit / Present Project Status Report	0days	Fri 2/7/14	Fri 2/7/14	0	0	100%	$0.00	$0.00
19	✓	1.1.3.2	Research & Product Planning Methodology	0days	Fri 2/7/14	Fri 2/7/14	0	0	100%	$0.00	$0.00
20	✓	**1.1.4**	**PPM # 2 - 686A**	**15days**	**Fri 2/7/14**	**Fri 2/28/14**	**1**	**1**	**100%**	**$4,080.00**	**$4,080.00**
21	✓	1.1.4.1	Project scope statement	5days	Mon 2/10/14	Fri 2/14/14	1	1	100%	$1,200.00	$1,200.00
22	✓	1.1.4.2	PMP Table of contents	1day	Mon 2/17/14	Mon 2/17/14	1	1	100%	$240.00	$240.00
23	✓	1.1.4.3	Update Gant Chart	2days	Tue 2/18/14	Wed 2/19/14	1	1	100%	$480.00	$480.00
24	✓	1.1.4.4	Update WBS	1day	Wed 2/19/14	Wed 2/19/14	1	1	100%	$240.00	$240.00
25	✓	1.1.4.5	Research Sources and Key Words	1day	Thu 2/20/14	Thu 2/20/14	1	1	100%	$240.00	$240.00
26	✓	1.1.4.6	Preliminary research methods and approach	1day	Thu 2/20/14	Thu 2/20/14	1	1	100%	$240.00	$240.00
27	✓	1.1.4.7	Requirements documentation	1day	Fri 2/21/14	Fri 2/21/14	1	1	100%	$240.00	$240.00
28	✓	**1.1.4.8**	**Student/Advisory Committee Contact**	**9days**	**Fri 2/7/14**	**Thu 2/20/14**	**0**	**0**	**100%**	**$0.00**	**$0.00**
29	✓	1.1.4.8.1	Sign Submit Contract	0days	Fri 2/7/14	Fri 2/7/14	0	0	100%	$0.00	$0.00



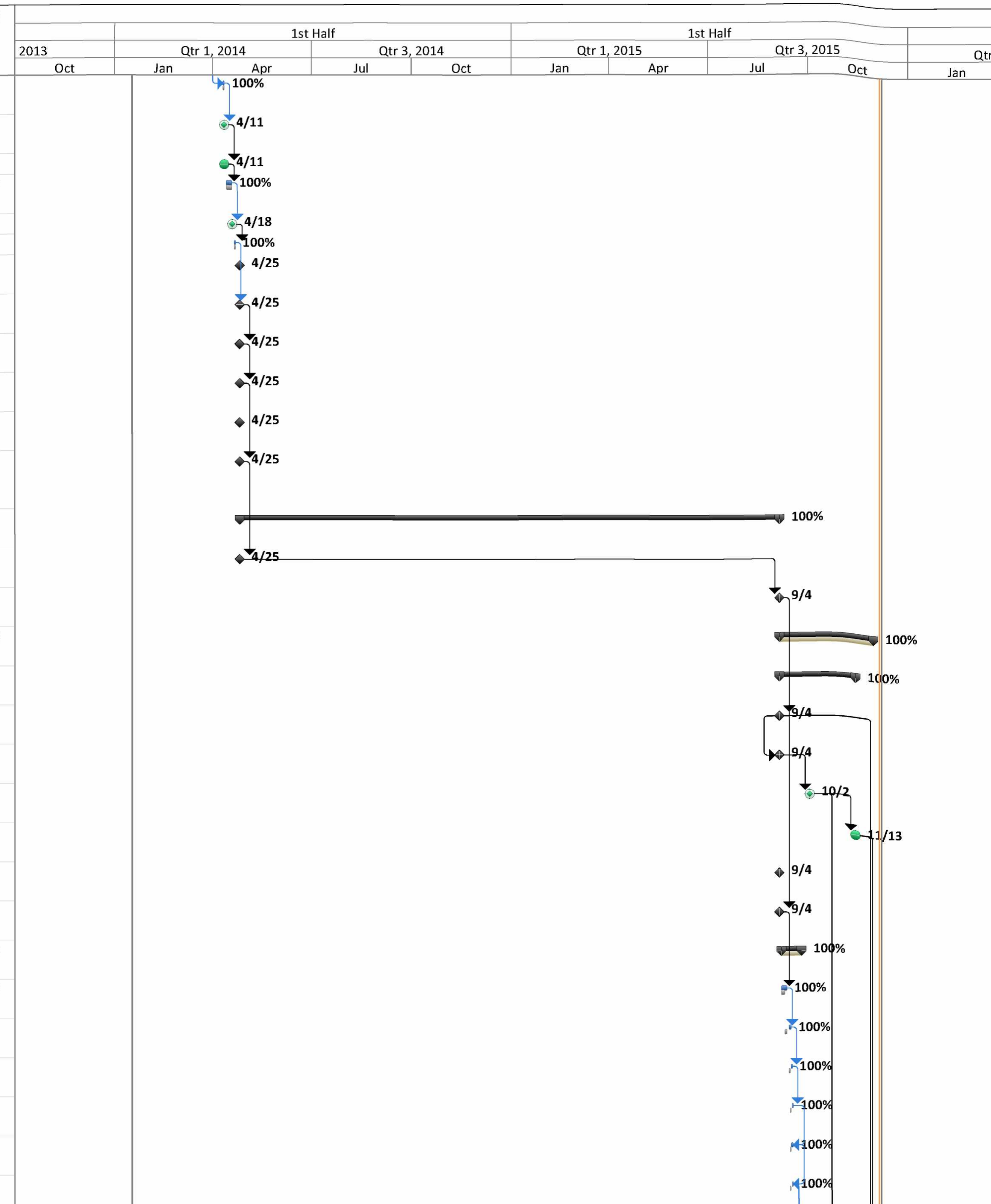
Critical	Task	Manual Task	Duration-only	Baseline Milestone	Summary	External Tasks	Inactive Milestone
Critical Split	Split	Start-only	Baseline	Milestone	Manual Summary	External Milestone	Inactive Summary
Critical Progress	Task Progress	Finish-only	Baseline Split	Summary Progress	Project Summary	Inactive Task	Deadline

ID	ℹ	WBS	Task Name	Duration	Start	Finish	SPI	CPI	% Comple	Baseline Cost	Actual Cost
30	✓	1.1.4.8.2	Receive Signed Contract	0days	Thu 2/20/14	Thu 2/20/14	0	0	100%	$0.00	$0.00
31	✓	1.1.4.9	Submit PPM #2 Documents	0days	Fri 2/21/14	Fri 2/21/14	0	0	100%	$0.00	$0.00
32	✓	1.1.4.10	Review Revise Project Files	5days	Mon 2/24/14	Fri 2/28/14	1	1	100%	$1,200.00	$1,200.00
33	✓	**1.1.5**	**Session III - 686A**	**0days**	**Fri 2/28/14**	**Fri 2/28/14**	**0**	**0**	**100%**	**$0.00**	**$0.00**
34	✓	1.1.5.1	Submit / Present Project Status Report	0days	Fri 2/28/14	Fri 2/28/14	0	0	100%	$0.00	$0.00
35	✓	1.1.5.2	Project Management Plan	0days	Fri 2/28/14	Fri 2/28/14	0	0	100%	$0.00	$0.00
36	✓	**1.1.6**	**PPM # 3 - 686A**	**15days**	**Mon 3/3/14**	**Fri 3/21/14**	**1**	**1**	**100%**	**$4,320.00**	**$4,320.00**
37	✓	1.1.6.1	Written draft of project management plan	6days	Mon 3/3/14	Mon 3/10/14	1	1	100%	$1,440.00	$1,440.00
38	✓	1.1.6.2	Revise abstract	1day	Tue 3/11/14	Tue 3/11/14	1	1	100%	$240.00	$240.00
39	✓	1.1.6.3	Research methods, results and approach for analysis	2days	Wed 3/12/14	Thu 3/13/14	1	1	100%	$480.00	$480.00
40	✓	1.1.6.4	Description of expected project deliverables and outcomes	2days	Wed 3/12/14	Thu 3/13/14	1	1	100%	$480.00	$480.00
41	✓	1.1.6.5	Update on Knowledge Areas processes	1day	Fri 3/14/14	Fri 3/14/14	1	1	100%	$240.00	$240.00
42	✓	1.1.6.6	Updated Gantt chart	1day	Fri 3/14/14	Fri 3/14/14	1	1	100%	$240.00	$240.00
43	✓	1.1.6.7	Submit PPM #3 Documents	0days	Fri 3/14/14	Fri 3/14/14	0	0	100%	$0.00	$0.00
44	✓	1.1.6.8	Review Revise Project Files	5days	Mon 3/17/14	Fri 3/21/14	1	1	100%	$1,200.00	$1,200.00
45	✓	**1.1.7**	**Session IV - 686A**	**0days**	**Fri 3/21/14**	**Fri 3/21/14**	**0**	**0**	**100%**	**$0.00**	**$0.00**
46	✓	1.1.7.1	Research Validation Workshop. Joint session	0days	Fri 3/21/14	Fri 3/21/14	0	0	100%	$0.00	$0.00
47	✓	**1.1.8**	**Session V - 686A**	**0days**	**Fri 3/28/14**	**Fri 3/28/14**	**0**	**0**	**100%**	**$0.00**	**$0.00**
48	✓	1.1.8.1	Research Analysis	0days	Fri 3/28/14	Fri 3/28/14	0	0	100%	$0.00	$0.00
49	✓	**1.1.9**	**PPM #4 - 686A**	**61days**	**Fri 1/17/14**	**Fri 4/11/14**	**1**	**1**	**100%**	**$5,040.00**	**$5,040.00**
50	✓	1.1.9.1	Research instruments and analysis methodology	3days	Mon 3/31/14	Wed 4/2/14	1	1	100%	$720.00	$720.00
51	✓	**1.1.9.2**	**IRB**	**48days**	**Fri 1/17/14**	**Tue 3/25/14**	**1**	**1**	**100%**	**$1,200.00**	**$1,200.00**
52	✓	1.1.9.2.1	Start IRB Training	0days	Fri 1/17/14	Fri 1/17/14	0	0	100%	$0.00	$0.00
53	✓	1.1.9.2.2	Complete IRB training	0days	Thu 2/27/14	Thu 2/27/14	0	0	100%	$0.00	$0.00
54	✓	1.1.9.2.3	Complete IRB Proposal	5days	Wed 3/19/14	Tue 3/25/14	1	1	100%	$1,200.00	$1,200.00
55	✓	1.1.9.2.4	Submit IRB	0days	Tue 3/25/14	Tue 3/25/14	0	0	100%	$0.00	$0.00
56	✓	1.1.9.3	Draft presentation of project objectives, charter, project management plan description of project deliverables	5days	Wed 3/26/14	Tue 4/1/14	1	1	100%	$1,200.00	$1,200.00
57	✓	1.1.9.4	Final draft of project management plan	6days	Thu 4/3/14	Thu 4/10/14	1	1	100%	$1,440.00	$1,440.00
58	✓	1.1.9.5	Update Gantt chart	1day	Fri 4/11/14	Fri 4/11/14	1	1	100%	$240.00	$240.00



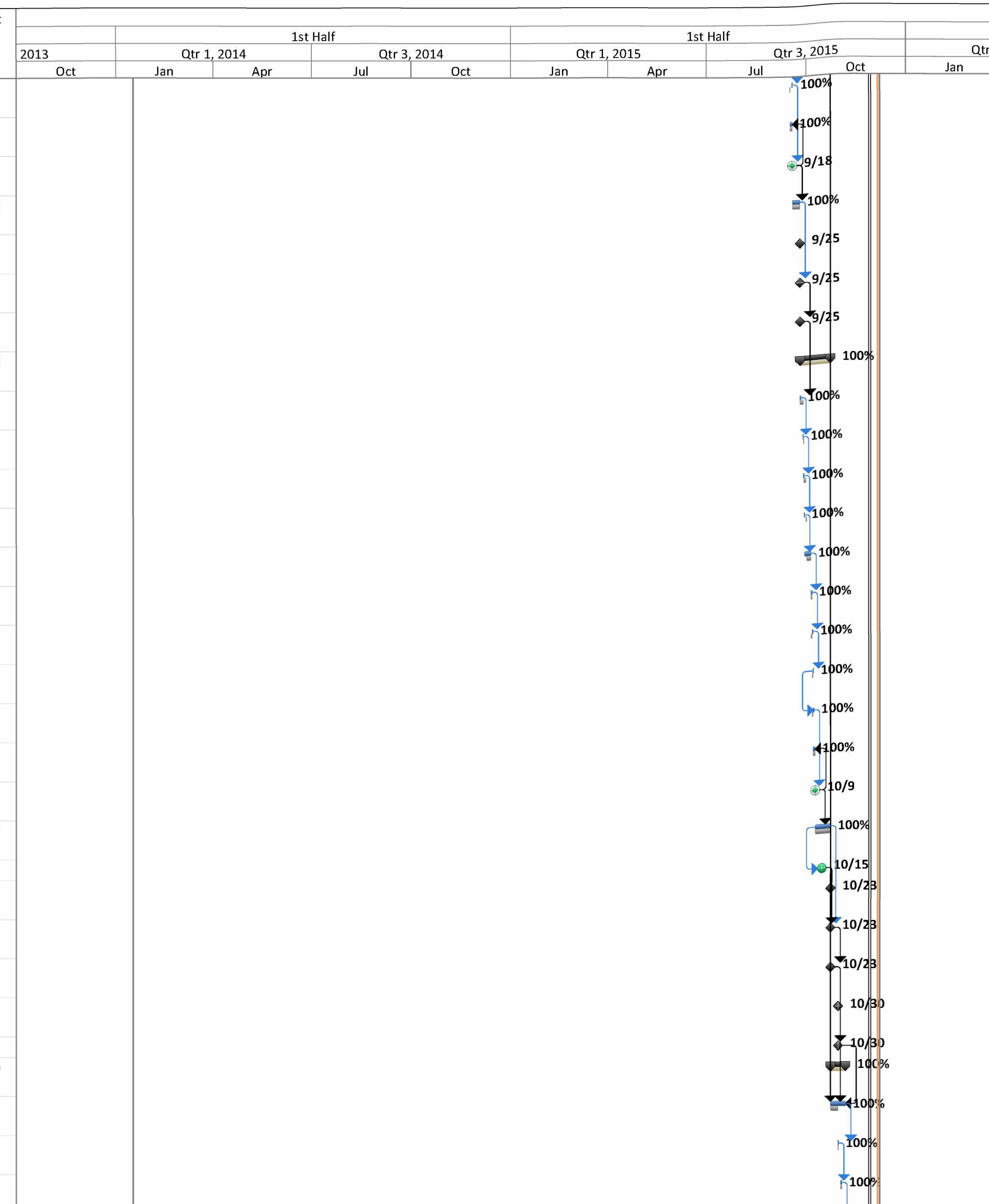
Critical		Task		Manual Task		Duration-only		Baseline Milestone	◇	Summary		External Tasks		Inactive Milestone	◇
Critical Split		Split		Start-only	[	Baseline		Milestone	◆	Manual Summary		External Milestone	◇	Inactive Summary	
Critical Progress		Task Progress		Finish-only	]	Baseline Split		Summary Progress		Project Summary		Inactive Task		Deadline	⇩

ID		WBS	Task Name	Duration	Start	Finish	SPI	CPI	% Complete	Baseline Cost	Actual Cost
59	✓	1.1.9.6	Update Four Knowledge Areas processes	1day	Fri 4/11/14	Fri 4/11/14	1	1	100%	$240.00	$240.00
60	✓	1.1.9.7	Submit PPM #4 Documents	0days	Fri 4/11/14	Fri 4/11/14	0	0	100%	$0.00	$0.00
61	✓	**1.1.10**	**GO / NO-GO - 686A Decision Point**	**0days**	**Fri 4/11/14**	**Fri 4/11/14**	0	0	**100%**	$0.00	$0.00
62	✓	1.1.11	Finalize Presentation	5days	Mon 4/14/14	Fri 4/18/14	1	1	100%	$1,200.00	$1,200.00
63	✓	**1.1.12**	**Final Presentations Posted on Blackboard**	**0days**	**Fri 4/18/14**	**Fri 4/18/14**	0	0	**100%**	$0.00	$0.00
64	✓	**1.1.13**	**Final Oral Presentations**	**1day**	**Mon 4/21/14**	**Mon 4/21/14**	0	0	**100%**	$0.00	$0.00
65	✓	**1.1.14**	**Final Project Deliverables Submitted to Blackboard.**	**0days**	**Fri 4/25/14**	**Fri 4/25/14**	**0**	**0**	**100%**	**$0.00**	**$0.00**
66	✓	1.1.14.1	Final project management plan and refined project research, deliverables, outcomes	0days	Fri 4/25/14	Fri 4/25/14	0	0	100%	$0.00	$0.00
67	✓	1.1.14.2	Summary narrative of lessons learned	0days	Fri 4/25/14	Fri 4/25/14	0	0	100%	$0.00	$0.00
68	✓	1.1.14.3	Descriptive narrative of how focused knowledge areas will be applied in project	0days	Fri 4/25/14	Fri 4/25/14	0	0	100%	$0.00	$0.00
69	✓	**1.1.14.4**	**Leadership and Contribution to Learning of Others**	**0days**	**Fri 4/25/14**	**Fri 4/25/14**	**0**	**0**	**100%**	**$0.00**	**$0.00**
70	✓	1.1.14.4.1	Assessment of effective course leadership, stakeholder management and contribution to learning of others	0days	Fri 4/25/14	Fri 4/25/14	0	0	100%	$0.00	$0.00
71	✓	**1.2**	**Project Study**	**355days**	**Fri 4/25/14**	**Fri 9/4/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
72	✓	1.2.1	Update Research Files & Collect Data	0days	Fri 4/25/14	Fri 4/25/14	0	0	100%	$0.00	$0.00
73	✓	1.2.2	Research Files & Data Source Collection complete	0days	Fri 9/4/15	Fri 9/4/15	0	0	100%	$0.00	$0.00
74	✓	**1.3**	**Executing, Controlling & Closing 686B**	**60.25days**	**Fri 9/4/15**	**Mon 11/30/15**	**1**	**1.09**	**100%**	**$10,548.00**	**$9,690.00**
75	✓	**1.3.1**	**Project Paper / Presentation**	**50days**	**Fri 9/4/15**	**Fri 11/13/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
76	✓	1.3.1.1	Start Project Presentation Draft	0days	Fri 9/4/15	Fri 9/4/15	0	0	100%	$0.00	$0.00
77	✓	1.3.1.2	Start Project Paper Draft	0days	Fri 9/4/15	Fri 9/4/15	0	0	100%	$0.00	$0.00
78	✓	1.3.1.3	Submit Paper to Management for Review	0days	Fri 10/2/15	Fri 10/2/15	0	0	100%	$0.00	$0.00
79	✓	1.3.1.4	Management Approves the Paper	0days	Fri 11/13/15	Fri 11/13/15	0	0	100%	$0.00	$0.00
80	✓	**1.3.2**	**Session I - 686B**	**0days**	**Fri 9/4/15**	**Fri 9/4/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
81	✓	1.3.2.1	Submit / Present Project Status Report	0days	Fri 9/4/15	Fri 9/4/15	0	0	100%	$0.00	$0.00
82	✓	**1.3.3**	**PPM #1 - 686B**	**14.5days**	**Mon 9/7/15**	**Fri 9/25/15**	**1**	**0.84**	**100%**	**$2,880.00**	**$3,420.00**
83	✓	1.3.3.1	Project Management Plan updates	5days	Mon 9/7/15	Fri 9/11/15	1	0.6	100%	$720.00	$1,200.00
84	✓	1.3.3.2	Change Control Process, Project progress method and status	2days	Mon 9/14/15	Tue 9/15/15	1	1	100%	$480.00	$480.00
85	✓	1.3.3.3	Risk response implementation	1day	Wed 9/16/15	Wed 9/16/15	1	1	100%	$120.00	$120.00
86	✓	1.3.3.4	Project deliverables status update	1day	Thu 9/17/15	Thu 9/17/15	1	1	100%	$60.00	$60.00
87	✓	1.3.3.5	Data collection/research update	2days	Wed 9/16/15	Thu 9/17/15	1	0.5	100%	$60.00	$120.00
88	✓	1.3.3.6	Update on Knowledge Areas processes	1day	Thu 9/17/15	Thu 9/17/15	1	1	100%	$120.00	$120.00



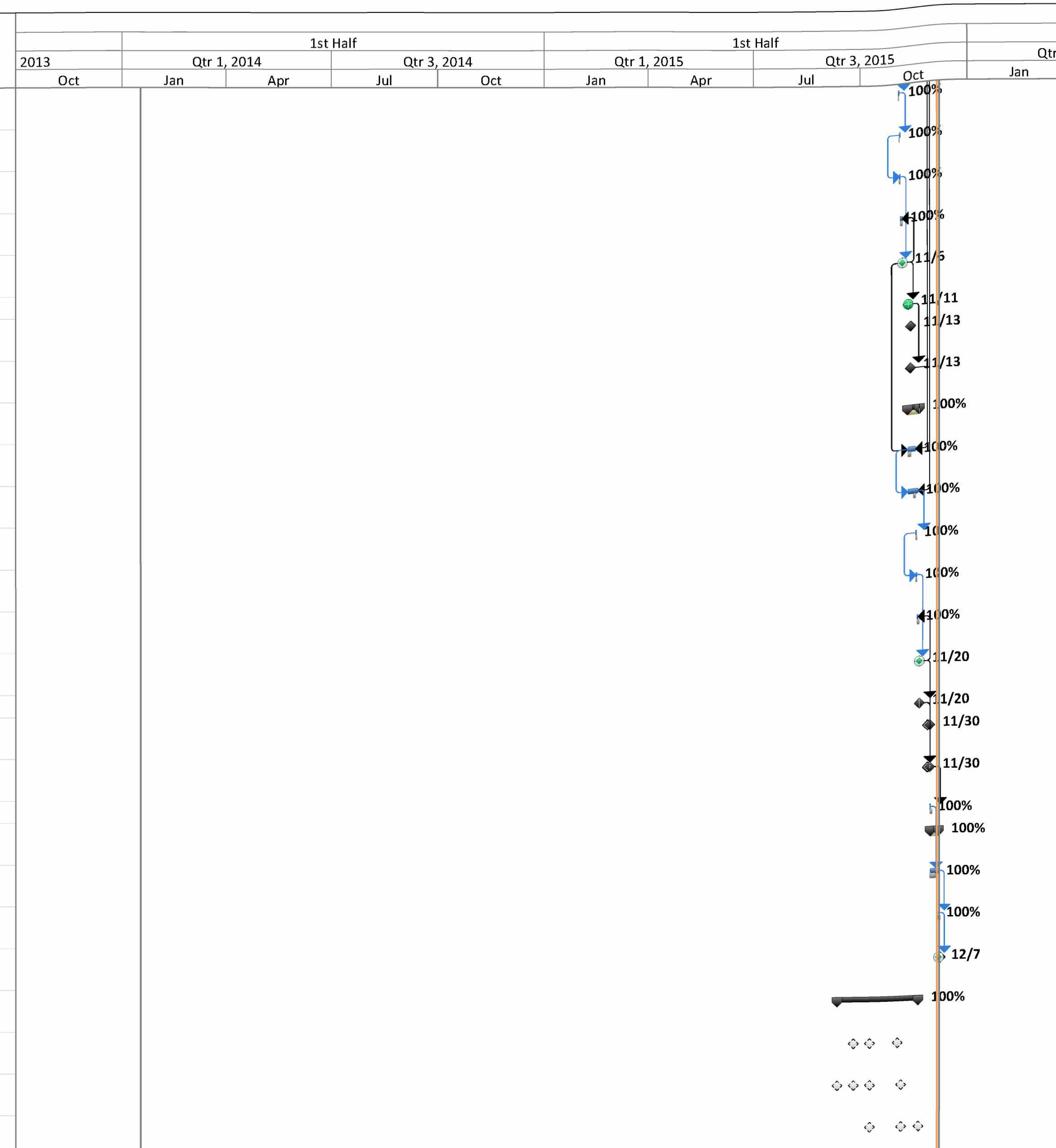
Critical		Task		Manual Task		Duration-only		Baseline Milestone	◇	Summary		External Tasks		Inactive Milestone	◇
Critical Split		Split		Start-only	⊏	Baseline		Milestone	◆	Manual Summary		External Milestone	◆	Inactive Summary	
Critical Progress		Task Progress		Finish-only	⊐	Baseline Split		Summary Progress		Project Summary		Inactive Task		Deadline	⇩

ID		WBS	Task Name	Duration	Start	Finish	SPI	CPI	% Complete	Baseline Cost	Actual Cost
89	✓	1.3.3.7	Final signed GSP directly to PM Department Staff	0.5days	Fri 9/18/15	Fri 9/18/15	1	1	100%	$120.00	$120.00
90	✓	1.3.3.8	Feeding Buffer	2days	Wed 9/16/15	Fri 9/18/15	0	0	100%	$0.00	$0.00
91	✓	1.3.3.9	Submit PPM#1	0days	Fri 9/18/15	Fri 9/18/15	0	0	100%	$0.00	$0.00
92	✓	1.3.3.10	Control & Monitor Project	5days	Fri 9/18/15	Fri 9/25/15	1	1	100%	$1,200.00	$1,200.00
93	✓	**1.3.4**	**Session II - 686B**	**0days**	**Fri 9/25/15**	**Fri 9/25/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
94	✓	1.3.4.1	Submit / Present Project Status Report	0days	Fri 9/25/15	Fri 9/25/15	0	0	100%	$0.00	$0.00
95	✓	1.3.4.2	Interpretation of Research Results	0days	Fri 9/25/15	Fri 9/25/15	0	0	100%	$0.00	$0.00
96	✓	**1.3.5**	**PPM #2 - 686B**	**20days**	**Fri 9/25/15**	**Fri 10/23/15**	**1**	**0.99**	**100%**	**$4,320.00**	**$4,380.00**
97	✓	1.3.5.1	Updated Abstract	0.5days	Fri 9/25/15	Fri 9/25/15	1	2	100%	$240.00	$120.00
98	✓	1.3.5.2	Updated Table of Contents	0.25days	Mon 9/28/15	Mon 9/28/15	1	2	100%	$120.00	$60.00
99	✓	1.3.5.3	Validated research analysis	1day	Mon 9/28/15	Tue 9/29/15	1	2	100%	$480.00	$240.00
100	✓	1.3.5.4	Project progress status	0.25days	Tue 9/29/15	Tue 9/29/15	1	2	100%	$120.00	$60.00
101	✓	1.3.5.5	Project Management Plan updates	4days	Tue 9/29/15	Mon 10/5/15	1	0.5	100%	$480.00	$960.00
102	✓	1.3.5.6	Risk response implementation	1day	Mon 10/5/15	Tue 10/6/15	1	1	100%	$120.00	$120.00
103	✓	1.3.5.7	Update on Knowledge Areas processes	1day	Tue 10/6/15	Wed 10/7/15	1	0.5	100%	$120.00	$240.00
104	✓	1.3.5.8	Project deliverables status update	0.5days	Wed 10/7/15	Wed 10/7/15	1	2	100%	$120.00	$60.00
105	✓	1.3.5.9	Update Project Schedule	1day	Wed 10/7/15	Thu 10/8/15	1	1	100%	$120.00	$120.00
106	✓	1.3.5.10	Feeding Buffer	2days	Wed 10/7/15	Fri 10/9/15	0	0	100%	$0.00	$0.00
107	✓	1.3.5.11	Submit PPM#2	0days	Fri 10/9/15	Fri 10/9/15	0	0	100%	$0.00	$0.00
108	✓	1.3.5.12	Control & Monitor Project	10days	Fri 10/9/15	Fri 10/23/15	1	1	100%	$2,400.00	$2,400.00
109	✓	**1.3.6**	**GO/NO-GO - 686B Decision Checkpoint**	**0days**	**Thu 10/15/15**	**Thu 10/15/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
110	✓	**1.3.7**	**Session III - 686B**	**0days**	**Fri 10/23/15**	**Fri 10/23/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
111	✓	1.3.7.1	Submit / Present Project Status Report	0days	Fri 10/23/15	Fri 10/23/15	0	0	100%	$100.00	$0.00
112	✓	1.3.7.2	Technical Writing and Formatting	0days	Fri 10/23/15	Fri 10/23/15	0	0	100%	$0.00	$0.00
113	✓	**1.3.8**	**Session IV - 686B**	**0days**	**Fri 10/30/15**	**Fri 10/30/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
114	✓	1.3.8.1	Writing, Presentation & Lesson's Learned	0days	Fri 10/30/15	Fri 10/30/15	0	0	100%	$0.00	$0.00
115	✓	**1.3.9**	**PPM #3 - 686B**	**10days**	**Fri 10/23/15**	**Fri 11/6/15**	**1**	**1.82**	**100%**	**$1,860.00**	**$1,020.00**
116	✓	1.3.9.1	Working draft of complete and properly formatted paper	10days	Fri 10/23/15	Fri 11/6/15	1	2	100%	$1,200.00	$600.00
117	✓	1.3.9.2	Revise Abstract	0.5days	Fri 10/30/15	Fri 10/30/15	1	2	100%	$120.00	$60.00
118	✓	1.3.9.3	Research results and analysis	1day	Mon 11/2/15	Mon 11/2/15	1	2	100%	$240.00	$120.00



Critical		Task		Manual Task		Duration-only		Baseline Milestone	Summary	External Tasks	Inactive Milestone
Critical Split		Split		Start-only		Baseline		Milestone	Manual Summary	External Milestone	Inactive Summary
Critical Progress		Task Progress		Finish-only		Baseline Split		Summary Progress	Project Summary	Inactive Task	Deadline

ID		WBS	Task Name	Duration	Start	Finish	SPI	CPI	% Comple	Baseline Cost	Actual Cost
119	✓	1.3.9.4	Preliminary conclusions and project deliverables	1day	Tue 11/3/15	Tue 11/3/15	1	1	100%	$120.00	$120.00
120	✓	1.3.9.5	Gantt chart update	0.5days	Wed 11/4/15	Wed 11/4/15	1	1	100%	$60.00	$60.00
121	✓	1.3.9.6	Update on Knowledge Areas processes	0.5days	Wed 11/4/15	Wed 11/4/15	1	2	100%	$120.00	$60.00
122	✓	1.3.9.7	Feeding Buffer	2days	Wed 11/4/15	Fri 11/6/15	0	0	100%	$0.00	$0.00
123	✓	1.3.9.8	Submit PPM #3	0days	Fri 11/6/15	Fri 11/6/15	0	0	100%	$0.00	$0.00
124	✓	**1.3.10**	**GO/NO-GO - 686B Decision Checkpoint**	**0days**	**Wed 11/11/15**	**Wed 11/11/15**	0	0	**100%**	$0.00	$0.00
125	✓	**1.3.11**	**Session V - 686B**	**0days**	**Fri 11/13/15**	**Fri 11/13/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
126	✓	1.3.11.1	Great Presentations	0days	Fri 11/13/15	Fri 11/13/15	0	0	100%	$0.00	$0.00
127	✓	**1.3.12**	**PPM #4 - 686B**	**8days**	**Wed 11/11/15**	**Fri 11/20/15**	**1**	**1.78**	**100%**	**$1,440.00**	**$810.00**
128	✓	1.3.12.1	Draft presentation	5days	Wed 11/11/15	Tue 11/17/15	1	2.4	100%	$720.00	$300.00
129	✓	1.3.12.2	Final complete and properly formatted project report and final project deliverables	7days	Wed 11/11/15	Thu 11/19/15	1	1.14	100%	$480.00	$420.00
130	✓	1.3.12.3	Update Gantt Chart	0.5days	Wed 11/18/15	Wed 11/18/15	1	4	100%	$120.00	$30.00
131	✓	1.3.12.4	Update on Knowledge Areas processes	1day	Wed 11/18/15	Wed 11/18/15	1	2	100%	$120.00	$60.00
132	✓	1.3.12.5	Feeding Buffer	1day	Thu 11/19/15	Thu 11/19/15	0	0	100%	$0.00	$0.00
133	✓	1.3.12.6	Submit PPM #4	0days	Fri 11/20/15	Fri 11/20/15	0	0	100%	$0.00	$0.00
134	✓	1.3.12.7	**FINAL GO/NO-GO - 686B Decision Checkpoint**	0days	Fri 11/20/15	Fri 11/20/15	0	0	100%	$0.00	$0.00
135	✓	**1.3.13**	**Final Presentations Posted on Blackboard**	**0days**	**Mon 11/30/15**	**Mon 11/30/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
136	✓	1.3.13.1	Final Oral Presentation. PowerPoint/other media	0days	Mon 11/30/15	Mon 11/30/15	0	0	100%	$0.00	$0.00
137	✓	**1.3.14**	**Final Oral Defenses**	**0.25days**	**Mon 11/30/15**	**Mon 11/30/15**	1	0.8	**100%**	$48.00	$60.00
138	✓	**1.4**	**Closing**	**5.25days**	**Mon 11/30/15**	**Mon 12/7/15**	**0.95**	**3.6**	**100%**	**$1,560.00**	**$330.00**
139	✓	1.4.1	Prepare Project Deliverables Package	5days	Mon 11/30/15	Mon 12/7/15	0.95	3.6	100%	$1,080.00	$300.00
140	✓	1.4.2	Submit Final Project Deliverables	0.25days	Mon 12/7/15	Mon 12/7/15	0	0	100%	$480.00	$30.00
141	✓	1.4.3	Project Closed	0days	Mon 12/7/15	Mon 12/7/15	0	0	100%	$0.00	$0.00
142	✓	**1.5**	**Project Meetings**	**50days**	**Fri 9/11/15**	**Fri 11/20/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
143	✓	**1.5.1**	**Core Team Meetings**	**26days**	**Fri 9/25/15**	**Mon 11/2/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
147	✓	**1.5.2**	**Advisor's Meeting**	**39days**	**Fri 9/11/15**	**Thu 11/5/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**
152	✓	**1.5.3**	**Sponsor's Meetings**	**30days**	**Fri 10/9/15**	**Fri 11/20/15**	**0**	**0**	**100%**	**$0.00**	**$0.00**



Critical		Task		Manual Task		Duration-only		Baseline Milestone		Summary		External Tasks		Inactive Milestone
Critical Split		Split		Start-only		Baseline		Milestone		Manual Summary		External Milestone		Inactive Summary
Critical Progress		Task Progress		Finish-only		Baseline Split		Summary Progress		Project Summary		Inactive Task		Deadline

Appendix C - Stakeholder Requirement

Stakeholder Requirement

Stakeholder Register	Identification Information					Project requirements and Expectations			Classification				Communication		
Name	ORG	Position / Title	Location	Role	Contact info.	Major requirements	Measures of Success	Expectations	Classification	Current Level of Support	Desired level of support	Influence	Mode	Frequency	Level of detail
Internal Stakeholders															
IP (M.Luce)	COP	Supervisor / Integrated Planning	Anchorage	Project Sponsor		Identify Stakeholders, their requirements and how they measure success. Identify most significant issues and areas for improvement. Facilitate stakeholder and core team meeting to identify stakeholder needs and deliver project milestones	Deliver project milestones on time. Meet and exceed expectations	Improve the integrated scheduling process in order to meet stakeholder needs	Very Active	High	High	High	1	Bi-Weekly	High Level
Project Manager (A. Mici)	COP	D & W Planning Coordinator	Anchorage	Project Manager	al.mici@hotmail.com	Stakeholders attend and are prepare for meetings, provide feedback and be open to identify any issues and areas for improvement. Be able to use the PMI templates and processes. Knowledge of and demonstrated mastery of project management principles and practices	Identify Stakeholders, capture stakeholder requirements and how they measure success. Complete the project milestones and deliverables on time. Satisfy stakeholder needs and meet their requirements. Get approvals for the project submittals. Deliver a high quality product that is easy to read	Projects stakeholders are involved in meetings and sessions, review project deliverables and provide feedback. Research paper will capture challenges that project managers are facing in an Arctic Environment	Very Active	High	High	Low	1	Bi-Weekly	Detail
(J.H. / J.P.)	AES	Planner / Well Facility	North Slope	Team Member		Reliable rig schedule that collaborates across all support and functional groups and communicate project changes	Jobs entering or break-in the 90 gate to meet the minimum requirement identified on the checklist and assures material availability and be informed if changes occurred.	Minimize jobs break-in the 90 day gates.	Active	Medium	High	Medium	1	Bi-Week	Detail
(LJ. / D.V.)	COP	Supervisor / Drilling	Anchorage	Team Members		Improve rig scheduling process by being proactive and evaluating prior to scheduling a job, minimize schedule changes and minimize jobs entering on 90 day gate. Minimize rig move downtime	No schedule changes after 90 day gate.	Rig schedule changes to be analyzed and approved prior to rig schedule meeting	Active	Medium	High	High	1	Bi-Week	Detail
(B. P; J. B)	COP	Coordinator / Supervisor / Work-over	Anchorage	Core Team Members		The improved process to continue to be flexible and optimize for highest priority opportunities. Provide flexibility to optimize for highest priority. Formal approved break-in of highest rate wells and account for rig activity float	Continue to be flexible to schedule work or make changes and not constrain by the 90 day gate	Schedule work or make changes and not constrain by the 90 day gate	Active	Low	Low	High	1	Bi-Week	Detail
IP Team (C. H)	COP	Supervisor / CTD	Anchorage	Team Members		Reliable rig schedule that collaborates across all support and functional groups.Shown schedule time horizons with horizon gate criteria and a formal break-in process for each horizon.	Document and implement new rig scheduling process. No schedule changes after 90 day gate.	Improve and maximize value	Very Active	High	High	High	1	Bi-Week	Detail
(G.F; M. B)	COP	Supervisor / Development	Anchorage	Team Members		Reliable rig schedule that collaborates across all support and functional groups. Maximizes value by allowing formal approval break-in of high rate wells. Accounts for rig activity float, assures material availability and facility readiness	Simple and easy to understand and read rig work process flow and guidelines. Focus on the guidelines and checklists	Simple to follow process	Active	Medium	High	High	1	Bi-Week	Detail

Advisor & Steering Committee Members															
Project Advisor (LuAnn P.)	UAA		Anchorage	Faculty Professor	lpiccard@uaa.alaska.edu	Knowledge of and demonstrated mastery of project management principles and practices. The project must include demonstrated understanding and application of several project management knowledge areas. Ability to select or design an appropriate project, demonstration of the skill with establishing relevant, measureable objectives. Be able to scope and deliver project results that achieve stated objectives.	All the projects milestones and deliverables suited on time and high quality. Demonstrate knowledge and mastery of project management principles and practices	High quality deliverables, project presentations and well illustrated final paper	Very Active	High	High	High	1	Bi-Weekly	Detail
Faculty Committee Member (Roger H.)	UAA		AK	Faculty Professor	rkhull@uaa.alaska.edu	Demonstrate proficiency in the identification, analysis and understanding of user and stakeholder needs and requirements for the product of the project (e.g. templates, tools, results, deliverables, etc.) and the ability to translate these needs into project outcomes that clearly and measurably address and meet these needs and established acceptance criteria with demonstrated customer satisfaction	All the projects milestones and deliverables suited on time and high quality. Demonstrate knowledge and mastery of project management principles and practices	High quality deliverables, project presentations and well illustrated final paper	Very Active	High	High	High	1	Bi-Weekly	Detail
Committee Member (W. Almon.)	CPAI		AK	Company Representative		Clear and compelling summary documentation, a final approved project management plan for defined scope including relevant project management processes and knowledge areas, change, risk, stakeholder management plans, and a persuasive oral defense. The quality of interim documentation the final written project management plan, and other documentation and deliverables must meet fundamental standards of usage, format, terminology, grammar, and structure at a professional level sufficient for review and approval	All the projects milestones and deliverables suited on time and high quality. Demonstrate knowledge and mastery of project management principles and practices	High quality deliverables, project presentations and well illustrated final paper	Very Active	High	High	High	1	Bi-Weekly	Detail

Appendix D - Requirement Traceability Matrix

Requirement Traceability Matrix

Stakeholder Register		Stakeholder Requirements and Expectations		Relationship Traceability						
ID	**Name**	**Major requirements**	**Measures of Success**	**WBS**	**Priority**	**Category**	**Source**	**Relates to Objectives**	**Verification**	**Validation**
Internal Stakeholders										
1.0	(M. Luce)	Identify Stakeholders, their requirements and how they measure success. Identify most significant issues and areas for improvement. Facilitate stakeholder and core team meeting to identify stakeholder needs and deliver project milestones	Deliver project milestones on time. Meet and exceed expectations.	1.1.2.2 1.5.1 1.5.2 1.3.4.2	High	Org.	In Progress	Identify and prioritize major indicators impacting the schedule and best recommendations for delivering successful project in an Arctic environment.	Supervisor's Feedback on Project Deliverables	Project Core Team & Sponsor's Meetings
2.0	Project Manager (A. Mici)	Stakeholders attend and are prepare for meetings, provide feedback and be open to identify any issues and areas for improvement. Be able to use the PMI templates and processes. Knowledge of and demonstrated mastery of project management principles and practices	Identify Stakeholders, capture stakeholder requirements and how they measure success. Complete the project milestones and deliverables on time. Satisfy stakeholder needs and meet their requirements. Get approvals for the project submittals. Deliver a high quality product that is easy to read	1.1.2.2 1.5.1 1.5.2 1.5.3 1.5.4	High	Org. / Academic	In Progress	Identify and prioritize major indicators impacting the schedule and define schedule time horizons with horizon gate criteria including the risks and best recommendations for delivering successful project in an Arctic environment.	Supervisor's Feedback on Project Deliverables	Project Core Team Meetings
3.0	(J.H. / J.P.)	Reliable rig schedule that collaborates across all support and functional groups and communicate project changes. Secure Pre-Funding in early stage of the Planning Phase	Jobs entering or break-in the 90 gate to meet the minimum requirement identified on the checklist and assures material availability and be informed if changes occurred.	1.3.4.2	High	Org.	In Progress	Improve communications between groups and alignment of goals and better predictability of the schedule enables organization to staff appropriately.	Core Team Member Feedback on Project Deliverables	Project Core Team Meetings
4.0	(L.J. / D.V.)	Improve rig scheduling process by being proactive and evaluating prior to scheduling a job, minimize schedule changes and minimize jobs entering on 90 day gate. Minimize rig move downtime	No schedule changes within 90 day Gate.	1.3.4.2	High	Org.	In Progress	Safety improvement through better preparation and less work disruption	Supervisor's Feedback on Project Deliverables	Core Team Meeting
5.0	(B. P; J. B)	The improved process to continue to be flexible and optimize for highest priority opportunities. Provide flexibility to optimize for highest priority. Formal approved break-in of highest rate wells and account for rig activity float	Continue to be flexible to schedule work or make changes and not constrain by the 90 day gate	1.3.4.2	High	Org.	In Progress	Improve organization ability to identify efficiency and production optimization opportunity	Supervisor's Feedback on Project Deliverables	Final Project Research Report
6.0	(C. H)	Reliable rig schedule that collaborates across all support and functional groups. Shown schedule time horizons with horizon gate criteria and a formal break-in process for each horizon.	Document and implement new rig scheduling process. No schedule changes after 90 day gate.	1.3.4.2	High	Org	In Progress	Identify time horizons with horizon gate criteria including the risks and best recommendations for delivering successful project in an Arctic environment.	Core Team Member Feedback on Project Deliverables	Project Core Team Meetings
7.0	(G.F; M. B)	Reliable rig schedule that collaborates across all support and functional groups. Maximizes value by allowing formal approval break-in of high rate wells. Accounts for rig activity float, assures material availability and facility readiness	Simple and easy to understand and read rig work process flow and guidelines. Focus on the guidelines and checklists	1.3.4.2	High	Org.	In Progress	Improve communication of the scheduling process between all support and functional groups, and provides flexibility to optimize the schedule for highest oil production priority opportunities.	Supervisor's Feedback on Project Deliverables	Final Project Research Report

Advisor & Steering Committee Members										
8.0	Project Advisor (LuAnn P.)	Knowledge of and demonstrated mastery of project management principles and practices. The project must include demonstrated understanding and application of several project management knowledge areas. Ability to select or design an appropriate project, demonstration of the skill with establishing relevant, measureable objectives. Be able to scope and deliver project results that achieve stated objectives.	All the projects milestones and deliverables suited on time and high quality. Demonstrate knowledge and mastery of project management principles and practices	1.1.2 1.1.4 1.1.6 1.1.9 1.3.3 1.3.5 1.3.9 1.3.12 1.4.2	High	Academic	In Progress	Project Scope Statement, Project Management Plan, Research paper identifying best practices for scheduling process	Project Advisor Feedback on PPM Deliverables	PPM Check Points & Final Project Research Report
9.0	Faculty Committee Member (Roger H.)	Demonstrate proficiency in the identification, analysis and understanding of user and stakeholder needs and requirements for the product of the project (e.g. templates, tools, results, deliverables, etc.) and the ability to translate these needs into project outcomes that clearly and measurably address and meet these needs and established acceptance criteria with demonstrated customer satisfaction	All the projects milestones and deliverables suited on time and high quality. Demonstrate knowledge and mastery of project management principles and practices	1.1.2 1.1.4 1.1.6 1.1.9 1.3.3 1.3.5 1.3.9 1.3.12 1.4.2	High	Academic	In Progress	Project Scope Statement, Project Management Plan, Research paper identifying best practices for scheduling process.	Faculty Committee Member Member Feedback on PPM Deliverables	PPM Check Points & Final Project Research Report
10.0	Committee Member (Walter. A)	Clear and compelling summary documentation, a final approved project management plan for defined scope including relevant project management processes and knowledge areas, change, risk, stakeholder management plans, and a persuasive oral defense. The quality of interim documentation the final written project management plan, and other documentation and deliverables must meet fundamental standards of usage, format, terminology, grammar, and structure at a professional level sufficient for review and approval	All the projects milestones and deliverables suited on time and high quality. Demonstrate knowledge and mastery of project management principles and practices	1.1.2 1.1.4 1.1.6 1.1.9 1.3.3 1.3.5 1.3.9 1.3.12 1.4.2	High	Academic	In Progress	Project Scope Statement, Project Management Plan, Research paper identifying best practices for scheduling process	Faculty Committee Member Feedback on Project Deliverables	PPM Check Points & Final Project Research Report

Appendix E - Change Log

CHANGE MANAGEMENT LOG

Project Name:	Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope
Project Manager Name:	Alket Mici
Project Description:	Implement the Rig Scheduling Process and Recommend areas for Improvement

ID	Current Status	Priority	Change Request Description	Assigned to Sponsor	Expected Resolution Date	Action Steps	Impact Summary	Change Request Type	Date Identified	Assoc ID	Entered By	Actual Resolution Date	Final Resolution & Rationale
01	Closed	High	Remove "Reduce the rig move downtime by 10%" from the scope statement	Project Sponsor	09/18/15	Reduce Project Scope by removing "Reduce the rig move downtime by 10%" from the scope statement	The proposed change will reduce project approval risk by company legal department	Product	09/01/15	01	Alket Mici	09/18/15	Proposed change rejected
02	Closed	Critical	The project research will define the steps to produce a document that will serve as a guideline for project Owners to schedule rig work activities in the North Slope and not a company related document.	Project Sponsor	10/09/15	Change the project research approach and alysing research data rathere than company data.	The proposed change will narrow the projects scope and eliminate the company legal approval risks.	Product	09/07/15	02	Alket Mici	10/08/15	Proposed change approved

Appendix F - Change Request Form

Appendix A: Change Management Plan Approval

The undersigned acknowledge they have reviewed the Change Management Request and agree with the approach it presents. Changes to this Change Management Plan will be coordinated with and approved by the undersigned or their designated representatives.

Signature:		Date:	09/18/15
Print Name:	Alket Mici		
Title:	D&W Planning Engineer		
Role:	Project Manager		

Signature:		Date:	09/18/15
Print Name:	Michael Luce		
Title:	Integrated Planning Supervisor		
Role:	Project Sponsor		

Appendix C: Change Request Form

Project Title: Best Practices for Rig Scheduling Process

Date Prepared: 09-01-2015

Person Requesting Change: Alket Mici

Change Number: 01

Category of Change:

- [x] Scope
- [ ] Quality
- [ ] Requirements
- [ ] Cost
- [ ] Schedule
- [ ] Documents

Detailed Description of Proposed Change:

Redefine the project scope by removing "Reduce the rig move downtime by 10%" from the scope statement.

Justification for Proposed Change:

The proposed change will clarify the project scope and focus on the main topic. Also, it will narrow the projects scope and will not expose any company data analyses on the rig move.

Impacts of Change:

Scope	☐ Increase	☐ Decrease	☒ Modify
Description: The proposed change will narrow the projects scope and reduce any legal approval risks.			
Quality	☐ Increase	☐ Decrease	☐ Modify
Description: The proposed change will clarify the project scope and focus on the main topic			
Requirements	☐ Increase	☐ Decrease	☐ Modify
Description: The proposed change will narrow the projects scope and will not expose any sensitive data analyses			
Cost	☐ Increase	☐ Decrease	☐ Modify

Description:
The proposed change will not impact the cost of the project

Schedule	☐ Increase	☐ Decrease	☐ Modify

Description:
The proposed change will not impact the cost of the project

Project Documents:
Project documents will be revised and the Project Scope Change will be filed on the Project Change Log

Comments:

Disposition ☐ Approve ☐ Defer ☒ Reject

Justification:

Change Control Authority Signatures:

Name	Role	Signature
Alket Mici	Project Manager	
Michael Luce	Project Sponsor	

Date: 09-18-2015

Appendix C: Change Request Form

Project Title: **Best Practices for Rig Scheduling Process**

Date Prepared: 10-07-2015

Person Requesting Change: Alket Mici

Change Number: 02

Category of Change:

☒ Scope ☐ Quality ☐ Requirements

☐ Cost ☐ Schedule ☐ Documents

Detailed Description of Proposed Change:

The project research will define the steps to produce a document that will serve as a guideline for project Owners to schedule rig work activities in the North Slope and not a company related document.

Justification for Proposed Change:

The project scope change is required due to delays in company legal approval for the research paper report.

Impacts of Change:

Scope	☐ Increase	☐ Decrease	☒ Modify
Description: The proposed change will narrow the projects scope and eliminate the company legal approval risks.			
Quality	☐ Increase	☐ Decrease	☐ Modify
Description: The proposed change will not impact the project quality.			
Requirements	☐ Increase	☐ Decrease	☐ Modify
Description: The proposed change will not change Stakeholder requirements.			

Cost	☐ Increase	☐ Decrease	☐ Modify
Description: The proposed change will not impact the cost of the project.			
Schedule	☐ Increase	☐ Decrease	☐ Modify
Description: The proposed change will not impact the project schedule; however it will help on the approval process.			
Project Documents: Project documents will be revised and the Project Scope Change will be filed in the Change Log.			

Comments:

Disposition ☒ Approve ☐ Defer ☐ Reject

Justification:

Change Control Authority Signatures:

Name	Role	Signature
Alket Mici	Project Manager	
Michael Luce	Project Sponsor	

Date: 10-08-2015

Appendix G – Project Status Dashboard

PM 686B Project Status Report Dashboard

Name: Alket Mici Date: 10/23/2015

Project Title: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope

Synopsis of Project	**Progress Since Last Report**
What it's about and what it will deliver? This project will produce a paper capturing the best practices for Rig scheduling in the North Slope and recommend areas for improvement.	*Key tasks completed and key tasks started.* Received approval for the project change management Completed PPM#2 deliverables on time Project approved to the next checkpoint
Current Status	**Forecast**
Where am I now? Am I on track to meet next PPM deliverables? • In order to mitigate one of identified risks, submitted Scope change request to Project sponsor and received approval. • CPI = 0.98. Will be working on increasing the productivity and improve the cost performance. • Received valuable feedback from Project Advisors on project schedule and time management tracking.	*Is project tracking to next PPM and beyond towards project completion? (Big picture view)* • Complete PPM#3 deliverables • Complete research analyses for the project paper • Finalize the project paper for management review
Anticipated Changes/Key Risks/Corrective Actions	**Key Takeaways/Where Help Needed**
Imminent change, risks/responses, and corrective actions/timing required to keep project on track. Company Organization changes might affect the project support. Monitoring the project time and cost using the feeding buffers to bring the project back in track.	*Wrap up with key items and where help needed from stakeholders.* Feedback from Stakeholders, Advisor and Committee members will help on making quick corrective actions. Writing, formatting and translating a technical paper to be clear to non-oil industry readers. **Lessons learned** Organizational Legal approval process takes up to three months. After submitting PPM's check if all document are in place.

PM 686B Project Status Report Dashboard

Name: Alket Mici Date: 10/09/2015

Project Title: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope

<table>
<tr><th>Synopsis of Project</th><th>Progress Since Last Report</th></tr>
<tr><td>What it's about and what it will deliver?

This project will produce a paper capturing the best practices for Rig scheduling in the North Slope and recommend areas for improvement.</td><td>Key tasks completed and key tasks started.

Received approval for the project change management
Completed PPM#2 deliverables on time</td></tr>
<tr><th>Current Status</th><th>Forecast</th></tr>
<tr><td>Where am I now? Am I on track to meet next PPM deliverables?
In order to mitigate one of identified risks, submitted Scope change request to Project sponsor and received approval.
SPI = 0.98. Will be working on increasing the productivity and improve the cost performance.
Received valuable feedback from Project Advisors on project schedule and time management tracking.</td><td>Is project tracking to next PPM and beyond towards project completion? (Big picture view)
Complete PPM#3 deliverables
Complete research analyses for the project paper
Finalize the project paper for management review</td></tr>
<tr><th>Anticipated Changes/Key Risks/Corrective Actions</th><th>Key Takeaways/Where Help Needed</th></tr>
<tr><td>Imminent change, risks/responses, and corrective actions/timing required to keep project on track.

Changing positions within company will not be able to track some of project results.
Company Organization changes might affect the project support</td><td>Wrap up with key items and where help needed from stakeholders.

Feedback from Stakeholders, Advisor and Committee members will help on making quick corrective actions.
Writing, formatting and translating a technical paper to be clear to non-oil industry readers.

Lessons learned
Organizational Legal approval process takes up to three months.
After submitting PPM's check if all document are in place.</td></tr>
</table>

PM 686B Project Status Report Dashboard

Name: Alket Mici Date: 09/25/2015

Project Title: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope

<table>
<tr><th>Synopsis of Project</th><th>Progress Since Last Report</th></tr>
<tr><td>What it's about and what it will deliver?

This project will produce a paper capturing the best practices for Rig scheduling in the North Slope and recommend areas for improvement.</td><td>Key tasks completed and key tasks started.

Completed the PPM#1 project deliverables
Unable to submit all raw data until getting approval from Legal.
Identified that missed one step prior to getting the draft paper to Legal for review.</td></tr>
<tr><th>Current Status</th><th>Forecast</th></tr>
<tr><td>Where am I now? Am I on track to meet next PPM deliverables?
In order to mitigate one of identified risks, submitted Scope change request to Project sponsor and receive verbal rejection.
Agreed with the sponsor and started on finalizing the paper for review.
I will be in Yellow until submitting the paper for review and receiving approval from Legal.
Received valuable feedback from Project Advisor on Knowledge Areas and will make the corrections as needed.</td><td>Is project tracking to next PPM and beyond towards project completion? (Big picture view)
Complete PPM#2 deliverables
Finalize the project paper and receive the internal approval prior to submitting
Submit project paper to Legal for approval
Analyze actual results and data</td></tr>
<tr><th>Anticipated Changes/Key Risks/Corrective Actions</th><th>Key Takeaways/Where Help Needed</th></tr>
<tr><td>Imminent change, risks/responses, and corrective actions/timing required to keep project on track.

Unable to submit raw data until getting approval from Legal.
Secure company legal department approval as soon as possible in order to make quick corrections and revisions.
Changing positions within company will not be able to track some of project results.</td><td>Wrap up with key items and where help needed from stakeholders.

Feedback from Stakeholders, Advisor and Committee members will help on making quick corrective actions.
Writing, formatting and translating a technical paper to be clear to non-oil industry readers.

Lessons learned
Make sure you have the tools up and running and check on the expiration dates of software.
WBS schedule Pro is quite different from the WBS Chart Pro so allocate time to figure it out.</td></tr>
</table>

PM 686B Project Status Report Dashboard

Name: Alket Mici Date: 09/18/2015

Project Title: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope

Synopsis of Project	**Progress Since Last Report**
What it's about and what it will deliver? This project will produce a paper capturing the best practices for Rig scheduling in the North Slope and recommend areas for improvement.	*Key tasks completed and key tasks started.* Set up standing meeting with the Sponsor and Advisor. Completed the PPM#1 project deliverables Unable to submit all raw data until getting approval from Legal
Current Status	**Forecast**
Where am I now? Am I on track to meet next PPM deliverables? • In order to mitigate one of identified risks, submitted Scope change request to Project sponsor and receive verbal rejection. • I will be in Yellow until submitting the paper for review and receiving approval from Legal	*Is project tracking to next PPM and beyond towards project completion? (Big picture view)* • Complete PPM#2 deliverables • Complete and submit project paper to Legal for approval • Analyze actual results and data
Anticipated Changes/Key Risks/Corrective Actions	**Key Takeaways/Where Help Needed**
Imminent change, risks/responses, and corrective actions/timing required to keep project on track. Unable to submit raw data until getting approval from Legal. Secure company legal department approval as soon as possible in order to make quick corrections and revisions. Changing positions within company will not be able to track some of project results.	*Wrap up with key items and where help needed from stakeholders.* Feedback from Stakeholders, Advisor and Committee members will help on making quick corrective actions. Writing, formatting and translating a technical paper to be clear to non-oil industry readers. **Lessons learned** Make sure you have the tools up and running and check on the expiration dates of software. WBS schedule Pro is quite different from the WBS Chart Pro so allocate time to figure it out.

PM 686A Project Status Report Dashboard

Name: Alket Mici Date: 09/04/2015

Project Title: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope

Synopsis of Project	**Progress Since Last Report**
What it's about and what it will deliver? This project will produce a paper capturing the best practices for Rig scheduling work activities in the North Slope	*Key tasks completed and key tasks started.* Collected actual data Completed schedule progress
Current Status	**Forecast**
Where am I now? Am I on track to meet next PPM deliverables? • Started communication with Stakeholder and Advisor / Committee member. • Updated the project schedule	*Is project tracking to next PPM and beyond towards project completion? (Big picture view)* • Completing PPM1 deliverables • Set up standing meeting with Advisors and Stakeholders • Complete the first draft legal department approval • Analyze actual results and data
Anticipated Changes/Key Risks/Corrective Actions	**Key Takeaways/Where Help Needed**
Imminent change, risks/responses, and corrective actions/timing required to keep project on track. Traveling plans and very busy schedule for the next couple of weeks might affect the project deliverables and communication with the Stakeholders. Compete some of the deliverables prior to travel and communicate via e-mail with stakeholders. Secure company legal department approval as soon as possible in order to make quick corrections and revisions. Changing positions within company will not be able to track some of project results.	*Wrap up with key items and where help needed from stakeholders.* Feedback from Stakeholders, Advisor and Committee members will help on making quick corrective actions. Avoid letting big portion of work to be competed at few days prior due date. Communicate with Sponsor for project deliverables outcomes. Writing, formatting and translating a technical paper to be clear to no-oil industry readers.

PM 686A Project Status Report Dashboard

Name: Alket Mici Date: 03/28/2014

Project Title: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope

<table>
<tr><th>Synopsis of Project</th><th>Progress Since Last Report</th></tr>
<tr><td>What it's about and what it will deliver?

This project will produce a paper capturing the best practices for Rig scheduling work activities in the North Slope</td><td>Key tasks completed and key tasks started.

Completed PPM #3 deliverables and working on collecting research information.</td></tr>
<tr><th>Current Status</th><th>Forecast</th></tr>
<tr><td>Where am I now? Am I on track to meet next PPM deliverables?
Completed PPM #3 Deliverables
Draft for the Project Management Plan
Revised the abstract
Updated the Gant Chart
Expected research methods results and approach for analyses
Expected project deliverables and outcomes
Submitted IRB Proposal on IRBNet</td><td>Is project tracking to next PPM and beyond towards project completion? (Big picture view)
Communicating with stakeholders in order to define PMP.
Working on creating PMP and collecting information for the research paper
PPM #4 deliverables will be ready prior to due date.
More research templates were sent out to oil and gas experts involved/impacted by the rig schedule.</td></tr>
<tr><th>Anticipated Changes/Key Risks/Corrective Actions</th><th>Key Takeaways/Where Help Needed</th></tr>
<tr><td>Imminent change, risks/responses, and corrective actions/timing required to keep project on track.

Gained communication with the second Committee member.
Traveling plans and very busy schedule for the next couple of weeks might affect the project deliverables and communication with the Stakeholders. Compete some of the deliverables prior to travel and communicate via e-mail with stakeholders.
Include Stakeholder management as the fourth knowledge area.</td><td>Wrap up with key items and where help needed from stakeholders.

Feedback from the Advisor and Committee members will help on making corrective actions.
Avoid letting big portion of work to be competed at few days prior due date.
Communicate with Sponsor for project deliverables outcomes.</td></tr>
</table>

PM 686A Project Status Report Dashboard

Name: Alket Mici Date: 02/28/2014

Project Title: Best Practices and Guidelines for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope

Synopsis of Project	**Progress Since Last Report**
What it's about and what it will deliver? This project will produce a paper capturing the best practices for scheduling work activities in an Arctic Environment.	*Key tasks completed and key tasks started.* Completed PPM #2 deliverables
Current Status	**Forecast**
Where am I now? Am I on track to meet next PPM deliverables? • Created Project Scope Statement • Updated the knowledge areas • Revised and Completed the GSP • Revised Project Schedule and WBS • Preliminary research methods and approach complete • Identify research sources and key words • Completed IRB training • PMP table of contents completed • Meeting with stakeholders are scheduled • Requirement Traceability Matrix completed 80 % but not submitted	*Is project tracking to next PPM and beyond towards project completion? (Big picture view)* • Communicating with stakeholders in order to define PMP • Working on creating PMP and collecting information for the research paper • PPM #3 deliverables will be ready prior to due date • Continue sending out the research template, collecting and receiving information.
Anticipated Changes/Key Risks/Corrective Actions	**Key Takeaways/Where Help Needed**
Imminent change, risks/responses, and corrective actions/timing required to keep project on track. Lost communication with one of the Committee Advisors and assigned another Committee member. Health condition during past couple of weeks affected to complete all the deliverables on time	*Wrap up with key items and where help needed from stakeholders.* Need help to finalize Requirement Traceability Matrix. Avoid letting big portion of work to be competed at few days prior due date.

PM 686A Project Status Report Dashboard

Name: Alket Mici Date: 02/07/2014

Project Title: Best Practices for Scheduling Process

Synopsis of Project	**Progress Since Last Report**
What it's about and what it will deliver? This project will produce a paper capturing the best practices for scheduling work activities in an Arctic Environment.	*Key tasks completed and key tasks started.* PPM #1 deliverables completed and submitted.
Current Status	**Forecast**
Where am I now? Am I on track to meet next PPM deliverables? • Created and submitted Project Charter • Submitted the Abstract • Created the preliminary WBS and schedule • Provided letter from Sponsor • Completed stakeholder identification, analyses roles and responsibilities • Identified three knowledge areas • Completed the GSP	*Is project tracking to next PPM and beyond towards project completion? (Big picture view)* • Communicating with stakeholders in order to define the project scope • Working on creating the Scope Statement and collecting information for the research paper • PMP deliverables will be ready prior to due date • Schedule bi-weekly meetings with Project Sponsor and Advisor
Anticipated Changes/Key Risks/Corrective Actions	**Key Takeaways/Where Help Needed**
Imminent change, risks/responses, and corrective actions/timing required to keep project on track. Communicating with Committee members and Project Sponsor in order to identify any scope changes in early stage of the planning horizon.	*Wrap up with key items and where help needed from stakeholders.* Feedback from Sponsor and Faculty Committee members regarding project scope and approach.

Appendix H – Project IRB Approval

UAA Research & Graduate Studies
UNIVERSITY of ALASKA ANCHORAGE

3211 Providence Drive
Anchorage, Alaska 99508-4614
T 907.786.1099, F 907.786.1791
www.uaa.alaska.edu/research/ric

DATE:	March 27, 2014
TO:	Alket Mici
FROM:	University of Alaska Anchorage IRB
PROJECT TITLE:	[590313-1] Best Practices for Rig Scheduling Process
SUBMISSION TYPE:	New Project
ACTION:	EXEMPT APPROVED
DECISION DATE:	March 27, 2014

Your Institutional Review Board (IRB) proposal meets the U.S. Department of Health and Human Services requirements for the protection of human research subjects (45 CFR 46 as amended/revised) as being exempt from full Board review. In keeping with the usual policies and procedures of the IRB, your research project is approved with suggested revisions. Thank you for a copy of these revisions.

Therefore, you have permission to begin data collection for your study. If this study goes beyond one year from the date of this submission, you will need to submit a Progress Report for approval to continue the research and please submit a Final Report at the end of your project.

Please report promptly proposed changes in the research protocol for IRB review and approval.

On behalf of the Board, I wish to extend my best wishes for success in accomplishing the objectives of your study.

Sincerely,

Dianne M. Toebe

Dianne M. Toebe, PhD

Research Integrity & Compliance Officer

Appendix I – Project Expectations

Expectations for PM 686A and 686B Capstone Project Advising

Student Name: Alket Mici PM 686A or PM 6896B (Circle one) Semester: Fall 2015

Area of Responsibility	Student	Primary Advisor (1 person)	Committee Members (2 people)	Instructor of Record (IOR) and Admin Staff
Project Management	PRIMARY OWNER	Coaching, feedback and assessment	Coaching, feedback and assessment input	
Communication and Stakeholder Management	○ Clear description of project ○ Proactive selection of Advisor and Committee members ○ Demonstrate effective communication and stakeholder management by determining and coordinating necessary and agreed modes and setting expectations for timing, and emphasis or tailoring of feedback and communication across with PA and committee (and other stakeholders) ○ Provide regular status reports as agreed with PA and committee ○ Identify and resolve communication issues ○ Identify, balance and resolve	○ Email confirmation of agreement to serve ○ Availability as agreed	○ Email confirmation of agreement to serve ○ Availability as agreed	○ Faculty specialties matrix ○ Session Lectures ○ Syllabus ○ Blackboard materials ○ Announcements ○ AV set up ○ Final presentation schedule and logistics ○ Student and committee support as requested ○ Adjunct Faculty appointment letters ○ Escalation path

		project deliverables • Assignment of PPM scores • Provide scores to IOR • Go/No checkpoint recommendation • Assign final grade	Go/No checkpoints	• Ensure consistency across students • Communicate go/no-go decisions to students • Input final grade to UA Online
Administrative Documents	• GSP preparation and submission to PM Office • Signed Expectations agreement • IRB submittal (686A) • Apply for graduation (686B) • RSVP for Hooding and commencement (686B)			• Graduate Studies Plan (GSP signatures and processing • Include signed "Expectations" form in student file. • DF paperwork and annual progress report for students • Graduation Audit • Graduation Requirement Report (GRR) • Archive final project deliverables

Student is responsible for obtaining the following signatures and submitting completed form to PM office to include in student file.

I understand and agree to the expectations described above:

Student Signature:__________ Date: 09-03-2015

Advisor Signature:__________ Date: 9-9-15

Committee Member:__________ Date: 09/09/2015

Committee Member: Walter S. Alman Date: 9-11-15
(Walter Alman)

Expectations for PM 686A and 686B Capstone Project Advising-Spring 2014

Area of Responsibility	Student	Primary Advisor (1 person)	Committee Members (2 people)	Instructor of Record (IOR) and Admin Staff
Project Management	**PRIMARY OWNER**	Coaching, feedback and assessment	Coaching, feedback and assessment input	
Communication and Stakeholder Management	• Clear description of project • Proactive selection of Advisor and Committee members • Demonstrate effective communication and stakeholder management by determining and coordinating necessary and agreed modes and setting expectations for timing, and emphasis or tailoring of feedback and communication across with PA and committee (and other stakeholders) • Provide regular status reports as agreed with PA and committee • Identify and resolve communication issues • Identify, balance and resolve contradictory	• Email confirmation of agreement to serve • Availability as agreed	• Email confirmation of agreement to serve • Availability as agreed	• Faculty specialties matrix • Session Lectures • Syllabus • Blackboard materials • Announcements • AV set up • Final presentation schedule and logistics • Student and committee support as requested • Adjunct Faculty appointment letters • Escalation path

	Inputs • Discuss and get signatures for "Expectations" from student, advisor and committee members and submit to PM office.			
Project Deliverables	• Complete work per syllabus • Incorporate feedback from PA, committee and stakeholders			
Feedback	• Determine type, timing and format of feedback from PA and committee • Solicit, coordinate and integrate feedback from stakeholders, PA and committee for PPMs and final project deliverables • Identify, balance and resolve contradictory inputs	Provide agreed feedback on timely basis	Provide agreed feedback on timely basis	
Final Presentation	• Prepare • Present	• Attend • Provide Feedback	• Attend • Provide Feedback	• Coordinate schedule and logistics
Assessment and Grading		• Coordinate input from committee for 4 PPMs and final project	Provide input to primary advisor for: 4 PPMs Final deliverables Go/No	• Input 4 PPMs and final deliverables scores to Blackboard • Ensure

		deliverables • Assignment of PPM scores • Provide scores to IOR • Go/No checkpoint recommendation • Assign final grade	checkpoints	consistency across students • Communicate go/no-go decisions to students • Input final grade to UA Online
Administrative Documents	• GSP preparation and submission to PM Office • Signed Expectations agreement • IRB submittal (686A) • Apply for graduation (686B) • RSVP for Hooding and commencement (686B)			• Graduate Studies Plan (GSP signatures and processing • Include signed "Expectations" form in student file. • DF paperwork and annual progress report for students • Graduation Audit • Graduation Requirement Report (GRR) • Archive final project deliverables

Student is responsible for obtaining the following signatures and submitting completed form to PM office to include in student file.

I understand and agree to the expectations described above:

Student Signature:________________ Date: 01/25/2014

Advisor Signature:________________ Date: 2/7/2014

Committee Member:________________ Date: 2/7/2014

Committee Member:________________ Date: 2/20/14

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

PROJECT CHARTER

University of Alaska Anchorage
Fall 2015

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

PROJECT CHARTER

VERSION: 01 REVISION DATE: 11/20/2015

Approver Name	Title	Signature	Date
M. Luce	Integrated Planning Supervisor		

Contents

Section 1. Project Overview

1.1 Problem Statement

North Slope Alaska has become more attractive for business due to recent changes on Alaska State tax reform. New players are continuing with exploration projects, major operators are announcing lots of new development opportunities and investments.

The recent increase in the number of the projects and activities on the North Slope of Alaska has become challenging, leading to numerous scheduling conflicts for equipment and resources. This project explains steps that can be taken to improve resource allocation and guidelines for scheduling oil drill rig work activities for oil and gas projects on Alaska's North Slope.

1.2 Project Description

Research and collect information about prioritization, scheduling, constraint management and unique challenges associated with scheduling process from experienced industry professionals.

Evaluate data from arctic environment and remote projects papers, articles and State and Federal agencies such as ADNR, AOGCC, etc.

Identify and prioritize major indicators impacting the schedule and define schedule time horizons with horizon gate criteria including the risks and best recommendations for delivering successful project in an Arctic environment.

1.3 Project Goals and Objectives

Identify and prioritize challenges and constraints that project managers are facing with remote and Arctic environment projects.

Improve communication of the scheduling process between all support and functional groups, and provides flexibility to optimize the schedule for highest oil production priority opportunities.

Safety improvement through better preparation and less work disruption

Improve organization ability to identify efficiency and production optimization opportunity

Improve communications between groups and alignment of goals and better predictability of the schedule enables organization to staff appropriately.

Complete the project management plan by April, 2014.

Complete and submit the best practices and guidelines for scheduling oil drill rig resources for projects on Alaska's North Slope research paper by, December, 2015

1.4 Project Scope

Based on previous research analyses from experts involved on the scheduling process, research of similar arctic environment projects and self-professional experience in remote projects, write a paper identifying the challenges that project owners are facing and come up with best recommendations for delivering successful projects in an Arctic environment.

Includes:

- Project Management Plan
- Research paper identifying best practices and guidelines for scheduling oil drill rig resources for projects on Alaska's North Slope.

Excludes:

- Political and Environmental
- Permitting

1.5 Critical Success Factors

Project Milestones and project deliverables will be completed on time and academic level quality.

Project Stakeholders, Sponsor, Advisor and Committee members will maintain communication and provide feedback.

Project progress will be measured and communicated through the lifecycle of the project.

1.6 Assumptions

Research papers and data are available to conduct analyses.

Industry experts are available and supportive to provide information and feedback.

1.7 Constraints

Complete Project Planning by April, 2014

Complete research paper by December, 2015

1.8 Project Risks

Project scope changes or modified will cause schedule delays.

Project research not approved by the management for external use and will cause scope change.

Section 2. Project Authority and Milestones

2.1 Project Oversight Authority

Project Deliverables will be reviewed by project sponsor.

Project deliverables will be reviewed and monitored by Faculty Advisor and Committee members.

2.2 Major Project Milestones

Milestone/Deliverable 686A	Target Date
Project Start	01/17/2014
Session I - Course Overview and Project Objectives	01/17/2014
PMP #1 Deliverables Submitted	01/31/2014
Session II - Research and Product Planning Methodology	02/07/2014
PMP #2 Deliverables Submitted	02/21/2014
Session III - Project Management Plan	02/28/2014
PMP #3 Deliverables Submitted	03/14/2014
Session IV – Lessons Learned Workshop	03/21/2014
UAA IRB Submittal Complete	03/28/2014
Session V - Research Analyses	03/28/2014
PMP #4 Deliverables Submitted	04/11/2014
Final Presentation and Deliverables Submitted	04/21/2014
Final Oral Defenses	04/21/2014
Final Deliverables Submitted	04/28/2014
Leadership and Contribution to Learning of Others	04/28/2014
Milestone/Deliverable 686B	**Target Date**
Project Start	09/04/2015
Session I – Monitoring and Controlling Project	09/04/2015

PMP #1 Deliverables Submitted	09/18/2015
Session II – Interpretation Research Results	09/25/2015
PMP #2 Deliverables Submitted	10/09/2015
GO/NO-GO - 686B Decision Checkpoint	10/15/2015
Session III - Technical Writing and Formatting	10/23/2015
Session IV - Writing, Presentation & Lesson's Learned	10/30/2015
PMP #3 Deliverables Submitted	11/06/2015
GO/NO-GO - 686B Decision Checkpoint	11/11/2015
Session V - Great Presentations	11/13/2015
PMP #4 Deliverables Submitted	11/20/2015
FINAL GO/NO-GO - 686B Decision Checkpoint	11/25/2015
Final Presentation and Deliverables Submitted	11/27/2015
Final Oral Defenses	12/01/2015
Project Closing	11/30/2015
Final Deliverables Submitted	12/08/2015

Section 3. Project Organization

3.1 Project Team Roles and Responsibilities

Name	Role	Responsibility
M. Luce	Project Sponsor	Approve Project Charter Attend scheduled meetings Review Project Deliverables Provide Feedback and Recommendations
A. Mici	Project Manager	Schedule Meetings with Stakeholders Conduct Research Analyze research Results Complete and Submit Project Deliverables
L. Piccard	Faculty Advisor	Attend scheduled meetings Review Project Deliverables Provide Feedback and Recommendations
R. Hull	Faculty Committee Member	Attend scheduled meetings Review Project Deliverables Provide Feedback and Recommendations
W. Almon	Faculty Committee Member	Attend scheduled meetings Review Project Deliverables Provide Feedback and Recommendations

3.2 Responsibility Matrix

Major Milestone	Project Sponsor	Faculty Advisor	Faculty Committee	Project Manger
Schedule Stakeholder Meetings	C	C	C	R
Complete Project Charter	C	C	C	R
Approve Project Charter	A	I	I	I
Conduct Research	C	C	C	R
Submit Project Deliverables	I	I	I	R
Review Project Deliverables	R	R	R	I
Complete Final Paper	I	I	I	R

Legend:

R = Responsible for execution
A = Final approval for authority
C = Must be consulted
I = Must be informed

Section 4. Points of Contact

Role	Name / Title	Phone	Email
Project Sponsor	M. Luce Integrated Planning Supervisor		
Project Manager	A. Mici D & W Planning Engineer	907-227-4046	amici.eng@gmail.com
Faculty Advisor	LuAnn Piccard MS / PMP	907-786-1923	lpiccard@uaa.alaska.edu
Faculty Committee Member	Roger Hull MSPM	907-786-1917	rkhull@uaa.alaska.edu
Faculty Committee Member	Walter Almon MSPM	907-263-8122	walter.almon@yahoo.com
Support Team Committee Member	C. Hunter Integrated Planning		

Section 5. Revision History

Version	Date	Name	Description
01	11/20/2015	Best Practices for Scheduling Oil Drill Rig Resources for Projects on Alaska's North Slope	Project Charter

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

LETTET FROM PROJECT SPONSOR

University of Alaska Anchorage
Fall 2015

ConocoPhillips Alaska
700 G. Street
Anchorage, AK, 99501

August 30, 2013

University of Alaska Anchorage
Project Management Department
University Center, Room 155

Attn: LuAnn Piccard

Re: Sponsorship Letter for Alket Mici

Dear Ms. Piccard,

It is my honor to sponsor Alket Mici for the PM 686A Project Management Capstone Project Initiating and Planning at University of Alaska, Anchorage.

In his role as the Drilling & Wells Planning Engineer, Alket facilitates collaboration and robust communication between Drilling & Wells key stakeholders and maintains an integrated schedule that supports our business plans. I recruited Alket into his current position as the Drilling & Wells Planning Engineer in ConocoPhillips Alaska's NSOD Integrated Planning Team ten months ago and am very excited to support his desire for an advanced degree in project management. We are currently in the process of improving our Rig scheduling process and Alket has taken the lead in facilitating this effort. I believe increasing the project management capabilities within our group will add value to this and other similar initiatives.

Alket brings a high level of commitment to all his activities. As a newly formed organization, the NSOD Integrated Planning team appreciates Alket's energy and enthusiasm. He has demonstrated conflict resolution, problem solving, and team building skills that are critical to establishing a new organization and business process within a legacy Business Unit. He has been ever-willing to work with members of our organization to share his knowledge and expertise; he also has been willing to take on tasks beyond his core job responsibilities. While Alket is a relatively junior member of our organization, as measured by tenure, he established himself as a go-to person for drilling and rig related field activities. I believe this speaks to his overall attitude and ability to learn, attributes that will serve him well in his graduate studies.

Alket Mici has quickly established himself as a valued member of our organization. His combination of intelligence, commitment, perseverance, and creativity will certainly make him a valuable member of any academic program.

Sincerely,

Michael Luce
NSOD Integrated Planning Supervisor
Michael.A.Luce@ConocoPhillips.com

BEST PRACTICES AND GUIDELINES FOR SCHEDULING OIL DRILL RIG RESOURCES FOR PROJECTS ON ALASKA's NORTH SLOPE

DIGITAL MEDIA FILES

University of Alaska Anchorage
Fall 2015

Tab #1: Final Project Report

Tab #2: Final Project Presentation

Tab #3: Project Lessons Learned

Tab #4: Knowledge Areas

Tab #5: Updated Project Management Plan

Tab #6: Project Charter

Tab #7: Letters from Project Sponsor